(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 099 690 A1

(12) EUROPEAN PATENT APPLICATION

published in accordance with Art. 158(3) EPC

(43) Date of publication:
16.05.2001 Bulletin 2001/20

(21) Application number: **99929887.0**

(22) Date of filing: **16.07.1999**

(51) Int. Cl.[7]: **C07D 205/08**, C07D 401/12, C07D 403/12, C07D 405/06, C07D 405/12, C07D 405/14, A61K 31/395, A61K 31/40, A61K 31/44, A61K 31/445, A61K 31/495, A61K 31/505, A61K 31/535

(86) International application number:
PCT/JP99/03864

(87) International publication number:
WO 00/05204 (03.02.2000 Gazette 2000/05)

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **23.07.1998 JP 20754098**

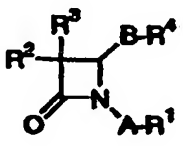
(71) Applicant: **SHIONOGI & CO., LTD.**
Osaka-shi, Osaka 541-0045 (JP)

(72) Inventors:
- **UENAKA, Masaaki**
  Toyono-gun, Osaka 563-0131 (JP)
- **KII, Makoto**
  Amagasaki-shi, Hyogo 660-0881 (JP)
- **NAKAJIMA, Masatoshi**
  Kanzaki-gun, Shiga 521-1231 (JP)

(74) Representative:
Baverstock, Michael George Douglas et al
BOULT WADE TENNANT,
Verulam Gardens
70 Gray's Inn Road
London WC1X 8BT (GB)

(54) MONOCYCLIC $g(b)-LACTAM COMPOUNDS AND CHYMASE INHIBITORS CONTAINING THE SAME

(57) Chymase inhibitors and cytokine production inhibitors containing compounds represented by general formula (I), prodrugs of the same, pharmaceutically acceptable salts thereof or hydrates of them, wherein A is -CO-, -CONH- or the like; R^1 is optionally substituted lower alkyl, optionally substituted aryl or the like; R^2 and R^3 are each independently hydrogen, optionally substituted lower alkyl or the like; B is -S-, -O- or the like; and R^4 is optionally substituted aryl or the like.



(I)

EP 1 099 690 A1

Description

Technical Field

[0001] The present invention relates to the use of compounds having chymase inhibitory activity and/or cytokine production inhibitory activity and novel compounds having chymase inhibitory activity and/or cytokine production inhibitory activity. In detail, the invention relates to chymase inhibiting compositions containing monocyclic β-lactam compounds having chymase inhibitory activity and/or cytokine production inhibitory activity, and novel monocyclic β-lactam compounds.

Background Art

[0002] Human chymase is a neutral serine protease whose molecular weight is about 30,000. It is known that chymase is generally synthesized, stored in, and secreted from mast cells and mainly exists e.g. in the heart, blood vessels and skin.

[0003] One of the main activities is, for example, the production of Angiotensin II. The production of Angiotensin II was considered to be caused by angiotensin converting enzyme (hereinafter referred to as ACE). Recently, however, it has been revealed that ACE effects only 10 to 15 % of Angiotensin II production in the human heart, and 80 % or more is caused by human chymase (Circulation Research, Vol. 66, p. 883, 1990 and Journal of Biological Chemistry, Vol.266, p. 17173, 1991).

[0004] Chymase is supposed to be concerned with the acceleration of histamine release from mast cells (Journal of Biochemistry, Vol. 103, p. 820 - 822, 1988) and chymase inhibitors are expected to be a new type of anti-inflammatory agent or anti-allergic agent.

[0005] Further, human chymase has been revealed to possess other activities: acceleration of macrophage foam cell formation, production of active collagenase from procollagenase, limited degradation of extracellular matrix such as collagen, fibronectine, vitronectin, etc., conversion of big-endothelin to endothelin, limited degradation of thrombin or IgG.

[0006] Pathophysiologically, chymase activity is known to be raised in blood vessels after balloon injury or heart myocardosis.

[0007] Peptide chymase inhibitors are described in WO93/25574, WO95/27053 and WO95/27055. Examples of non-peptide chymase inhibitors are imidazolidine derivatives in WO96/04248, pyridine and pyrimidine derivatives in WO96/33974 and triazine derivatives in EP713876A. These are quite different from the compounds of the present invention in chemical structure.

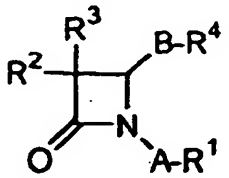
[0008] Some compounds having similar structures to that of the compounds of the present invention are described, for example, in GB 2266527 A, Japan Patent No. 2736113, J. Med. Chem., 1995, 38, 2449-2462 and USP 5,747,485. All of these have an elastase inhibitory activity, differing from the present invention. In JP 9-263577 A, other similar compounds having an elastase inhibitory activity and cytokine production inhibitory activity are described.

Disclosure of Invention

[0009] The object of the present invention is to provide a pharmaceutical composition for use as a chymase inhibitor and/or cytokine production inhibitor having a potent activity and novel compounds having chymase inhibition and/or cytokine production inhibitory activity.

[0010] The present invention provides a pharmaceutical composition for use as a chymase inhibitor and/or cytokine production inhibitor, specifically an anti-inflammatory agent, comprising

1) a compound of the formula (I):



(I)

wherein A is a bond, -CO-, -COO-, -COCO-, -CONH- or -SO_2-,

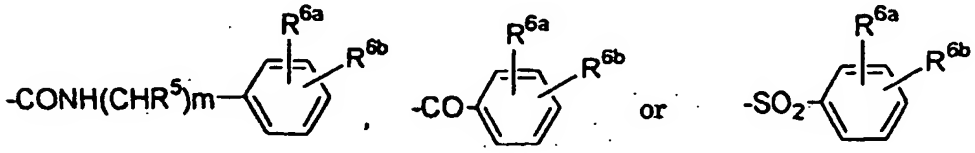
R^1 is optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl or optionally substituted aryl, and R^1 may be hydrogen when A is a bond, -CO-, -COCO-, -CONH- or -SO_2-,

R^2 and R^3 are each independently hydrogen, halogen, optionally substituted lower alkyl, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted carbamoyl or optionally substituted aryl,

B is a bond, -S-, -O-, -S-S-, -SO- or -SO_2-, and

R^4 is hydrogen, optionally substituted lower alkyl, optionally substituted aryl or optionally substituted heterocyclyl and R^4 may be optionally substituted acyl when B is a bond, -S-, -O-, -SO- or -SO_2- (hereinafter referred to as compound (I)).

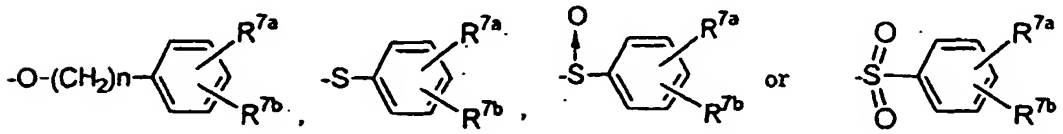
2) the compound described in 1) wherein A-R^1 is



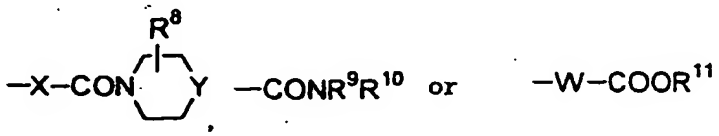
wherein R^5 is hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkoxy or optionally substituted aryl, R^{6a} and R^{6b} are each independently hydrogen, halogen, hydroxy, lower alkyl, carboxy, lower alkoxycarbonyl, lower alkoxy, aryl, acyl, optionally substituted amino, aryloxy, lower alkylthio or heterocyclyl and R^{6a} and R^{6b} taken together may form lower alkylenedioxy, and m is 0 or 1,

R^2 and R^3 are each independently hydrogen, optionally substituted phenyl or optionally substituted benzyl, and

B-R^4 is hydrogen, optionally substituted acyloxy,



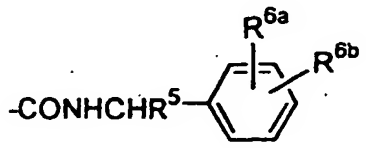
wherein R^{7a} and R^{7b} are each independently hydrogen, halogen, lower alkyl, lower alkoxy, lower alkenyl, amino, acylamino,



wherein X and W are each independently a bond, lower alkylene or lower alkenylene, Y is a bond, -CH_2-, -NR^{12}- (wherein R^{12} is hydrogen, cycloalkyl, heterocyclyl or lower alkyl optionally substituted with methylenedi-

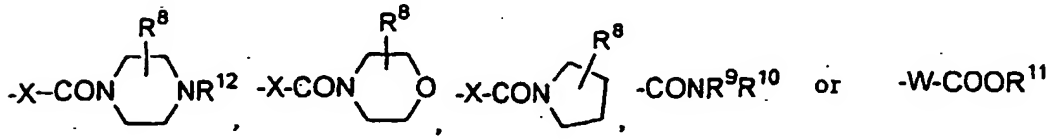
oxyphenyl) or -O-, R^8 is hydrogen, optionally substituted lower alkyl or optionally substituted carbamoyl, R^9, R^{10} and R^{11} are each independently hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted amino, optionally substituted aryl or optionally substituted arylsulfonyl and n is an integer of 0 to 6,

3) the compound described in 1) wherein A-R^1 is



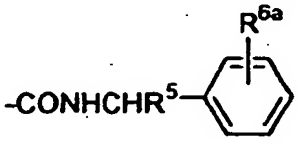
wherein R^5 is C1 to C3 alkyl or optionally substituted phenyl wherein the substituent is halogen, lower alkyl or lower alkoxy, R^{6a} and R^{6b} are each independently hydrogen, halogen, lower alkyl or lower alkoxy,
R^2 is benzyl optionally substituted with lower alkoxy,
R^3 is hydrogen,
B-R^4 is acyloxy,

wherein R^{7a} is hydrogen,

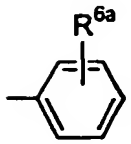


wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted lower alkyl or optionally substituted phenyl and R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl or,

4) the compound described in 1) wherein A-R^1 is

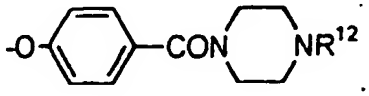


wherein R^5 is C1 to C3 alkyl or



and all R^{6a} are the same and hydrogen, halogen, lower alkyl or lower alkoxy, or

5) the compound described in 1) wherein A-R^1 is -CONHR^5Ph wherein Ph is phenyl, R^2 is benzyl, R^3 is C1 to C3 alkyl, B-R^4 is

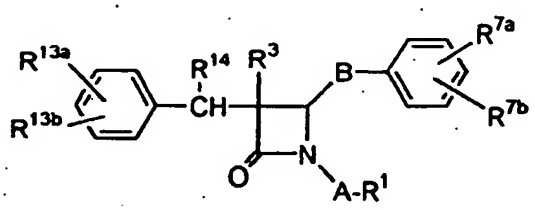


and R^5 and R^{12} are each independently C1 to C3 alkyl, prodrug, pharmaceutically acceptable salt or hydrate thereof.

[0011] The present invention provides a method for preventing and/or treating diseases caused by chymase, for example, cardiovascular diseases, inflammation, allergic diseases, rheumatics, asthma and atopy, comprising administering the compound (I) described in 1), prodrug, pharmaceutically acceptable salt or hydrate thereof.

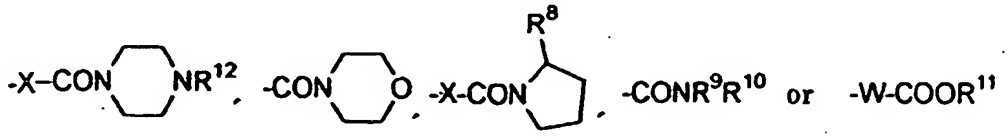
[0012] In one of other embodiments, the present invention provides use of the compound (I), prodrug, pharmaceutically acceptable salt or hydrate thereof for manufacturing a medicament for preventing and/or treating diseases caused by chymase.

[0013] In one of other embodiments, the present invention provides 6) a compound of the formula (I'):



(I')

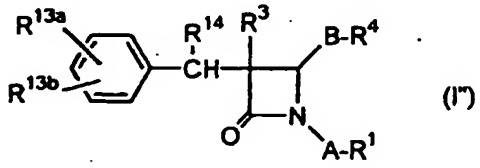
wherein A and R^1 are the same as defined in 1),
R^3 is hydrogen, halogen, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted aryl or optionally substituted benzyl,
R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted amino or optionally substituted lower alkylthio, and R^{13a} and R^{13b} taken together may form lower alkylenedioxy,
R^{14} is hydrogen, hydroxy, lower alkyl, lower alkoxy or acyloxy,
R^{7a} is hydrogen,



wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is hydrogen or lower alkyl, R^{10} is optionally substituted lower alkyl wherein the substituent is lower alkylamino; phenyl optionally substituted with halogen; carboxy; or lower alkoxycarbonyl optionally substituted with aryl, lower alkenyl, lower alkylamino, phenylamino, phenyl or benzenesulfonyl, R^{11} is hydrogen or optionally substituted lower alkyl (wherein the substituent is lower alkylamino; acyloxy; phenyl optionally substituted with halogen or methylenedioxy; or heterocyclyl) and R^{12} is C1 to C3 alkyl or cyclohexyl,
R^{7b} is hydrogen and B is O or S
(hereinafter referred to as a compound (I')), prodrug, pharmaceutically acceptable salt or hydrate thereof.

[0014] The present invention provides the following compounds, prodrugs, pharmaceutically acceptable salts or hydrates thereof:

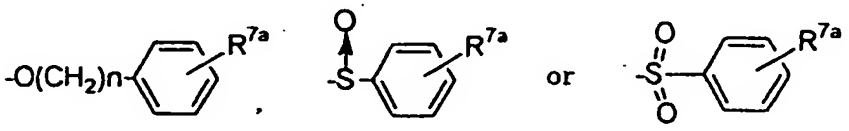
7) a compound of the formula (I"):



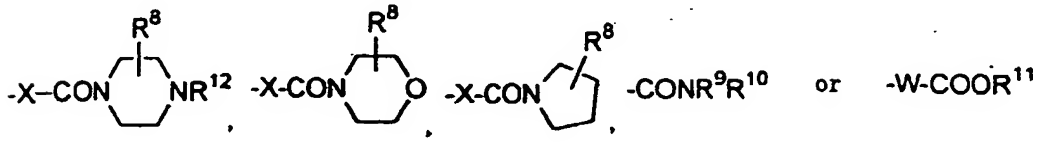
(I")

wherein B and R^4 are the same as defined in 1),
A is -CO-, -CONH- or -SO_2-,
R^1 is optionally substituted lower alkyl or optionally substituted aryl,
R^3 is hydrogen, halogen, lower alkyl, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted aryl or optionally substituted benzyl,
R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted amino or optionally substituted lower alkylthio and R^{13a} and R^{13b} taken together may form lower alkylenedioxy and
R^{14} is hydrogen, hydroxy, lower alkyl, lower alkoxy or acyloxy, excluding a compound wherein B-R^4 is optionally substituted aryloxy or optionally substituted acylthio and A is CONH (hereinafter referred to as Compound (I")),

8) the compound described in 7) wherein B-R^4 is acyloxy,



wherein n is 0 or 1, R^{7a} is hydrogen,



wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is

hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted alkyl or optionally substituted phenyl and R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl,

9) the compound described in 6) or 7) wherein R^3 is hydrogen,
10) the compound described in 6) or 7) wherein R^{13a} is hydrogen or C1 to C3 lower alkoxy at the *o*-position and R^{13b} is hydrogen,
11) Any one of the compounds selected from the group of

(a) 4-[3-Benzyl-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid,
(b) 3-Benzyl-2-[4-(4-methyl-piperazine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(c) 3-Benzyl-2-[4-(2-carbamoyl-pyrrolidine-1-carbonyl)-phenoxy)-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(d) 3-Benzyl-2-[4-(2-methyl-pyrrolidine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(e) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid,
(f) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid pyridin-4-ylmethyl ester,
(g) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid benzyl ester,
(h) 3-(2-Methoxy-benzyl)-2-oxo-4-[4-(4-pyrimidin-2-yl-piperazine-1-carbony)-phenoxy]-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(i) 2-[4-(4-Cyclohexyl-piperazine-1-carbonyl)-phenoxy]-3-(2-methoxy-benzyl)-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(j) 3-(2-Methoxy-benzyl)-2-[4-(4-methyl-piperazine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(k) 4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid,
(l) 2-[4-(4-Cyclohexyl-piperazine-1-carbonyl)-phenoxy]-3-(2-ethoxy-benzyl)-4-oxo-azetidine-1-carboxylic acid benzhydryl-amide,
(m) 3-(2-Ethoxy-benzyl)-2-[4-(morpholine-4-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid benzhydryl-amide,
(n) {4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-phenyl}-acetic acid,
(o) 3-{4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-phenyl}-acrylic acid,
(p) 4-[1-(Di-p-tolylmethyl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid,
(q) 4-[1-(Bis-4-fluoro-phenyl)-methyl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid and
(r) 4-[1-{[Bis-(4-methoxy-phenyl)-methyl]-carbamoyl}-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid.

[0015] The present invention provides a pharmaceutical composition, specifically a pharmaceutical composition for use as a chymase inhibitor and/or cytokine production inhibitor, more specifically, a pharmaceutical composition for use as an anti-inflammatory agent comprising the compound described in any one of 6) to 11), prodrug, pharmaceutically acceptable salt or hydrate thereof.

[0016] In other embodiment, the present invention provides a method for preventing and/or treating diseases caused by chymase comprising administering the compound described in any one of 6) to 11), prodrug, pharmaceutically acceptable salt or hydrate thereof, and use of the compound described in any one of 6) to 11), prodrug, pharmaceutically acceptable salt or hydrate thereof for manufacturing a medicament for preventing and/or treating diseases caused by chymase.

[0017] In the present specification, the term "halogen" includes fluorine, chlorine, bromine and iodine. Chlorine or bromine is preferable.

[0018] The term "lower alkyl" includes straight or branched chain alkyl having 1 to 10 carbon atoms, preferably 1 to 6 carbon atoms, more preferably 1 to 3 carbon atoms. For example, included are methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, n-pentyl, isopentyl, neopentyl, hexyl, isohexyl, n-heptyl, isoheptyl, n-octyl, isooctyl, n-nonyl and n-decyl.

[0019] The term "optionally substituted lower alkyl" includes lower alkyl optionally substituted with one or more of substituents at any possible positions. As the substituents, exemplified are hydroxy; halogen; lower alkoxy; carboxy; acyl; acyloxy; cycloalkyl; optionally substituted lower alkoxycarbonyl (wherein the substituent is amino optionally substituted with e.g. lower alkyl or aryl; optionally substituted amino wherein the substituent is e.g. lower alkyl or acyl; carbamoyl; optionally substituted aryl wherein the substituent is i)halogen, ii) optionally substituted lower alkyl wherein the

substituent is carboxy, optionally substituted lower alkoxycarbonyl wherein the substituent is e.g. aryl or alkylamino, optionally substituted lower alkenyloxycarbonyl wherein the substituent is e.g. aryl or alkylamino, optionally substituted aryloxycarbonyl wherein the substituent is e.g. aryl or alkylamino, or optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl, iii) optionally substituted lower alkenyl wherein the substituent is carboxy, optionally substituted lower alkoxycarbonyl wherein the substituent is e.g. aryl or alkylamino, lower alkenyloxycarbonyl, aryloxycarbonyl, optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl iv) lower alkoxy, v) carboxy, vi) lower alkoxycarbonyl, vii) aryl, viii) acyl, ix) optionally substituted amino wherein the substituent is e.g. lower alkyl, optionally substituted carbamoyl wherein the substituent is optionally substituted lower alkyl wherein the substituent is e.g. lower alkylamino or aryl, optionally substituted lower alkenyl wherein the substituent is e.g. lower alkylamino or aryl, optionally substituted aryl wherein the substituent is e.g. lower alkylamino or aryl, xi) aryloxy, xii) heterocyclyl, xiii) optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl, xiv) lower alkylenedioxy, heterocyclyl; or optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl. Preferable examples of "lower alkyl substituted with optionally substituted aryl" are unsubstituted benzyl, lower alkoxy benzyl and diphenylmethyl.

[0020] The alkyl parts of "lower alkoxy", "lower alkoxycarbonyl", "lower alkylamino" and "lower alkylthio" are the same as the above "lower alkyl", and their optional substituents are the same as the substituents for the above "optionally substituted alkyl".

[0021] The term "lower alkylene" includes straight or branched alkylene having 1 to 6 carbon atoms. For example, methylene, ethylene, trimethylene, tetramethylene, propylene and ethylethylene are included, and preferred is methylene.

[0022] The term "lower alkylenedioxy" includes methylenedioxy and ethylenedioxy and a preferable example is methylenedioxy.

[0023] The term "lower alkenyl" includes straight or branched alkenyl having 2 to 10 carbon atoms, preferably 2 to 6 carbon atoms, more preferably 2 to 4 carbon atoms. For example, vinyl, 1-propenyl, allyl, isopropenyl, butenyl, isobutenyl, butadienyl, pentenyl, isopentenyl, pentadienyl, hexenyl, isohexenyl, hexadienyl, heptenyl, octenyl, nonenyl and decenyl are included and these have at least one double bond at any possible position. As substituents for "optionally substituted lower alkenyl", exemplified are hydroxy, halogen, lower alkoxy, carboxy, acyl, acyloxy, cycloalkyl, lower alkoxycarbonyl, aryl, heterocyclyl, optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl and the lower alkenyl may be substituted with one or more of these substituents at any possible position.

[0024] The lower alkenyl part of "lower alkenyloxycarbonyl" and the substituents for "optionally substituted lower alkenyloxycarbonyl" are the same as the above.

[0025] The term "lower alkenylene" includes groups having one or more double bonds at any possible position in the above "lower alkylene" having 2 to 6 carbon atoms, preferably 2 to 4 carbon atoms. For example, vinylene, propenylene, butenylene, pentenylene and methylpropenylene are exemplified.

[0026] The term "lower alkynyl" means straight or branched alkynyl having 2 to 10 carbon atoms, preferably 2 to 6 carbon atoms, more preferably 2 to 4 carbon atoms and included are, for example, ethynyl, propynyl, butynyl, pentynyl, hexynyl, heptynyl, octynyl, nonynyl and decynyl. Lower alkynyl have at least one triple bond and further may have some double bonds at any possible position. The substituents for "optionally substituted lower alkynyl" are the same as those for the above "optionally substituted lower alkenyl".

[0027] The term "acyl" includes aliphatic acyl having 1 to 10 carbon atoms, preferably 1 to 6 carbon atoms, more preferably 1 to 3 carbon atoms or aroyl. For example, formyl, acetyl, propionyl, butyryl, isobutyryl, valeryl, pivaloyl, hexanoyl, acryloyl, propioloyl, methacryloyl, crotonoyl, cyclohexanecarbonyl and benzoyl are included. The substituents for "optionally substituted acyl" include hydroxy, halogen, lower alkoxy, carboxy, lower alkoxycarbonyl, aryl, and heterocyclyl, and the acyl may be substituted with one or more of these substituents at any possible position.

[0028] The acyl parts of "acyloxy" and "acylamino" and the substituents for "optionally substituted acyloxy" and "optionally substituted acylamino" are the same as the above "acyl" and the substituents for the above "optionally substituted acyl", respectively. A preferable example of "acyloxy" is acetyloxy.

[0029] The term "cycloalkyl" includes carbocyclyl having 3 to 6 carbon atoms and for example, cyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl are included. As the substituents for "optionally substituted cycloalkyl", hydroxy, halogen, lower alkoxycarbonyl, lower alkoxy, aryl and heterocyclyl are exemplified and the cycloalkyl may be substituted with one or more of these substituents at any possible position.

[0030] The term "cycloalkenyl" includes a group having one or more double bonds at any possible position in the above "cycloalkyl". For example, cyclopropenyl, cyclobutenyl, cyclopentenyl, cyclohexenyl and cyclohexadienyl are included. The substituents for "optionally substituted cycloalkenyl" are the same as those for the above "cycloalkyl" and the cycloalkenyl may be substituted with one or more of these substituents at any possible position.

[0031] The term "optionally substituted amino" includes substituted amino and unsubstituted amino. The amino may have one or more substituents such as hydroxy, halogen, lower alkyl, lower alkylamino, acyl, carbamoyl, aryl and heterocyclyl.

[0032] The term "optionally substituted carbamoyl" includes substituted carbamoyl and unsubstituted carbamoyl. Examples of the substituents are optionally substituted lower alkyl such as unsubstituted lower alkyl, optionally substituted lower alkenyl such as unsubstituted lower alkenyl, lower alkylsulfonyl, sulfamoyl, acyl optionally substituted with halogen, and amino, optionally substituted aryl such as unsubstituted aryl.

[0033] The term "aryl" includes phenyl, naphthyl, anthrathenyl, indenyl and phenanthrenyl. Phenyl is preferable.

[0034] As the substituents for "optionally substituted aryl", exemplified are i) hydroxy, ii) halogen, iii) optionally substituted lower alkyl wherein the substituent is halogen; carboxy; optionally substituted lower alkoxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted lower alkenyloxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted aryloxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl, iv) optionally substituted lower alkenyl wherein the substituent is halogen; carboxy; optionally substituted lower alkoxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted lower alkenyloxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted aryloxycarbonyl wherein the substituent is e.g. lower alkylamino or aryl; optionally substituted heterocyclylcarbonyl wherein the substituent is e.g. lower alkyl or carbamoyl v) optionally substituted lower alkoxy wherein the substituent is e.g. hydroxy, halogen, lower alkoxy, carboxyl, lower alkoxycarbonyl, amino or lower alkylamino, vi) carboxy, vii) optionally substituted lower alkoxycarbonyl wherein the substituent is acyloxy, lower alkylamino, optionally substituted aryl wherein the substituent is alkylenedioxy or halogen, heterocyclyl, viii) lower alkenyloxycarbonyl, ix) lower alkylenedioxy, x) acyl, xi) acyloxy, xii) optionally substituted amino wherein the substituent is e.g. lower alkyl, acyl, xiii) nitro, xiv) optionally substituted carbamoyl wherein the substituent is a) lower alkyl optionally substituted with carboxy; amino optionally substituted with lower alkyl or aroyl; lower alkoxycarbonyl optionally substituted with aryl; aryl optionally substituted with halogen, lower alkyl or lower alkoxy; b) cycloalkyl optionally substituted with e.g. aryl, c) lower alkenyl optionally substituted with e.g. lower alkylamino or aryl, d) amino optionally substituted with e.g. lower alkyl or aryl, e) aryl optionally substituted with e.g. lower alkylamino or aryl, f) arylsulfonyl xv) aryl, xvi) aryloxy, xvii) heterocyclyl or xviii) optionally substituted heterocyclylcarbonyl wherein the substituent is lower alkyl, arylalkyl optionally substituted with lower alkylenedioxy, cycloalkyl, carbamoyl, or heterocyclyl. The aryl may be substituted with one or more of these substituents at any possible position.

[0035] The aryl parts of "aryloxy", "arylsulfonyl" and "arylamino" are the same as the above "aryl", and the substituents for "optionally substituted aryloxy" and "optionally substituted arylsulfonyl" are the same as those for the above "optionally substituted aryl".

[0036] The term "optionally substituted benzyl" includes benzyl which may be substituted with lower alkyl or the same substituents as those for the above "optionally substituted lower alkyl" at the methylene part and may be substituted with the same substituents as those for the above "optionally substituted aryl" at the phenylene part. As the substituents for methylene part, lower alkyl and aryl are exemplified.

[0037] The term "heterocyclyl" includes heterocyclyl containing at least one hetero atom arbitrarily selected from a group of O, S and N. Examples of heterocyclyl include 5 to 6-membered aromatic heterocyclyl such as pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl, isoxazolyl, oxazolyl, oxadiazolyl, isothiazolyl, thiazolyl, thiadiazolyl, furyl and thienyl, fused aromatic heterocyclyl such as indolyl, benzimidazolyl, indazolyl, indolizinyl, quinolyl, isoquinolyl, cinnolinyl, phthalazinyl, quinazolinyl, naphthyridinyl, quinoxalinyl, pteridinyl, benzisoxazolyl, benzoxazolyl, benzoxadiazolyl, benzisothiazolyl, benzothiazolyl, benzothiadiazolyl, benzofuryl and benzothienyl, aliphatic heterocycle such as ethylene oxidyl, dioxanyl, thiiranyl, oxathioranyl, azetidinyl, thianyl, pyrrolidinyl, imidazolidinyl, pyrazolidinyl, piperidinyl, piperazinyl and morpholinyl.

[0038] As substituents for "optionally substituted heterocyclyl", exemplified are hydroxy, halogen, optionally substituted lower alkyl such as unsubstituted lower alkyl etc., lower alkenyl, lower alkoxy, carboxy, lower alkoxycarbonyl, optionally substituted carbamoyl such as unsubstituted carbamoyl etc., aryl and heterocyclyl. The heterocyclyl may be substituted with one or more of these substituents at any possible position.

[0039] The heterocyclyl part of "heterocyclylcarbonyl" and the substituents for "optionally substituted heterocyclylcarbonyl" are the same as the above "heterocyclyl" and those for "optionally substituted heterocyclyl", respectively. Preferable examples of "heterocyclylcarbonyl" are morpholylcarbonyl, piperazinylcarbonyl, methylpiperazinylcarbonyl, pyrimidinyl piperazinylcarbonyl, cyclohexylpiperazinylcarbonyl, piperidylcarbonyl and bipiperidylcarbonyl.

[0040] As pharmaceutically acceptable salt of the compound (I), exemplified are salts with mineral acids such as hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, hydrofluoric acid and hydrobromic acid; salts with organic acids such as formic acid, acetic acid, tartaric acid, lactic acid, citric acid, fumaric acid, maleic acid and succinic acid; salts with organic bases such as ammonium, trimethylammonium and triethylammonium; salts with alkali metals such as sodium and potassium and salts with alkaline earth metals such as calcium and magnesium.

[0041] The compound of the present invention includes hydrates, wherein arbitrary numbers of water molecules may coordinate to the compound (I), (I') or (I").

[0042] The compound of the present invention includes racemates, all enantiomers and all stereoisomers such as diastereomers, epimers, and enantiomers thereof.

Best Mode for Carrying Out the Invention

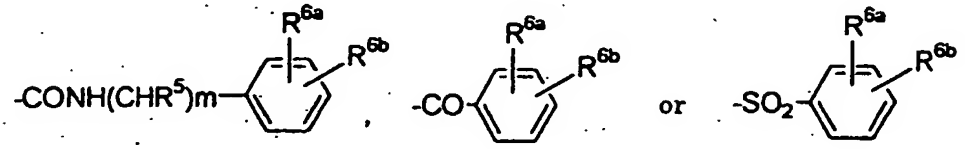
[0043] All of the compounds (I), (I') and (I") have chymase inhibitory activity and/or cytokine production inhibitory activity and the following compounds are specifically preferable.

[0044] In the above formula (I), (I') or (I")

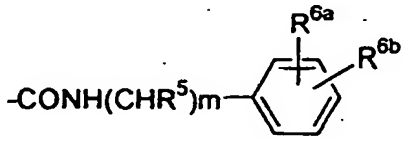
1) the compound wherein A is -CO-, -CONH- or -SO_2-, and

R^1 is optionally substituted lower alkyl or optionally substituted aryl (hereinafter referred to as "A and R^1 are AR^1-1"),

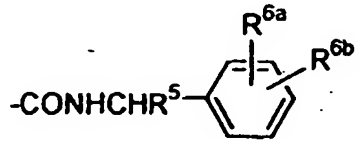
preferably the compound wherein A-R^1 is



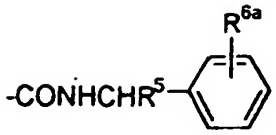
wherein R^5 is hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkoxy or optionally substituted aryl, R^{6a} and R^{6b} are each independently hydrogen, halogen, hydroxy, lower alkyl, carboxy, lower alkoxycarbonyl, lower alkoxy, aryl, acyl, optionally substituted amino, aryloxy, lower alkylthio or heterocyclyl and R^{6a} and R^{6b} taken together may form lower alkylenedioxy and m is 0 or 1 (hereinafter referred to as "A and R^1 are AR^1-2"), preferably the compound wherein A-R^1 is



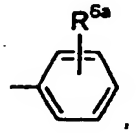
wherein R^5 is hydrogen, lower alkyl or optionally substituted phenyl wherein the substituent is halogen, lower alkyl or lower alkoxy, R^{6a} and R^{6b} are each independently hydrogen, halogen, lower alkyl or lower alkoxy and R^{6a} and R^{6b} taken together may form methylenedioxy and m is 1 (hereinafter referred to as "A and R^1 are AR^1-3"), preferably the compound wherein A-R^1 is



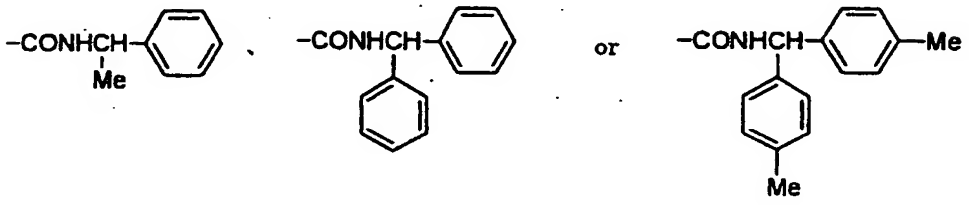
wherein R^5 is C1 to C3 alkyl or optionally substituted phenyl wherein the substituent is halogen, lower alkyl or lower alkoxy and R^{6a} and R^{6b} are each independently hydrogen, halogen, lower alkyl or lower alkoxy (hereinafter referred to as "A and R^1 are AR^1-4"), preferably the compound wherein A-R^1 is



wherein R^5 is C1 to C3 alkyl or

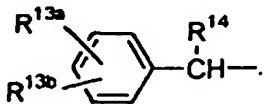


all R^{6a} are the same and hydrogen, halogen, lower alkyl or lower alkoxy (hereinafter referred to as "A and R^1 are AR^1-5"), preferably the compound wherein A-R^1 is

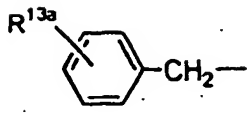


(hereinafter referred to as "A and R^1 are AR^1-5"),

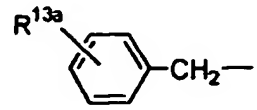
2) the compound wherein R^2 is hydrogen, optionally substituted lower alkyl or optionally substituted aryl (hereinafter referred to as "R^2 is R^2-1"), preferably the compound wherein R^2 is hydrogen, optionally substituted phenyl or optionally substituted benzyl (hereinafter referred to as R^2 is R^2-2), preferably the compound wherein R^2 is



wherein R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted aryloxy, optionally substituted heterocyclyloxy, optionally substituted amino such as unsubstituted amino, lower alkylamino, arylamino, heterocyclylamino etc., optionally substituted lower alkylthio, optionally substituted arylthio, optionally substituted heterocyclylthio, aryl or heterocyclyl and R^{13a} and R^{13b} taken together may form lower alkylenedioxy, R^{14} is hydrogen, hydroxy, lower alkyl, lower alkoxy or acyloxy (hereinafter referred to as "R^2 is R^2-3"),
preferably the compound wherein R^2 is



wherein R^{13a} is hydrogen, lower alkyl, lower alkoxy, phenyloxy, lower alkylamino, phenylamino, lower alkylthio, phenylthio or phenyl (hereinafter referred to as "R^2 is R^2-4"),
preferably the compound wherein R^2 is

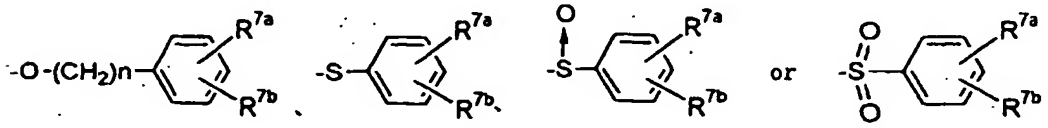


wherein R^{13a} is hydrogen, lower alkyl, lower alkoxy, lower alkylamino or lower alkylthio (hereinafter referred to as "R^2 is R^2-5"),
preferably the compound wherein R^2 is benzyl optionally substituted with lower alkoxy (hereinafter referred to as "R^2 is R^2-6"), and
more preferably the compound wherein R^2 is benzyl optionally substituted with lower alkoxy at *o*-position (hereinafter referred to as "R^2 is R^2-7"),

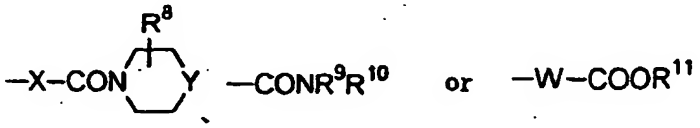
3) the compound wherein R^3 is hydrogen, halogen, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted aryl or optionally substituted benzyl (hereinafter referred to as "R^3 is R^3-1"),

preferably the compound wherein R^3 is hydrogen, optionally substituted phenyl or optionally substituted benzyl (hereinafter referred to as "R^3 is R^3-2"), and
preferably the compound wherein R^3 is hydrogen (hereinafter referred to as "R^3 is R^3-3"),

4) the compound wherein B-R^4 is hydrogen, optionally substituted acyloxy,

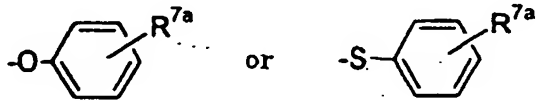


wherein R^{7a} and R^{7b} are each independently hydrogen, halogen, lower alkyl, lower alkoxy, lower alkenyl, amino, acylamino,

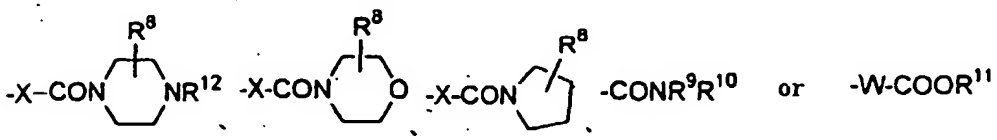


wherein X and W are each independently a bond, lower alkylene or lower alkenylene, Y is a bond, $-CH_2-$, $-NR^{12}-$ (wherein R^{12} is hydrogen, cycloalkyl, heterocyclyl or lower alkyl optionally substituted with methylenedioxyphenyl), or -O-, R^8 is hydrogen, optionally substituted lower alkyl or optionally substituted carbamoyl, R^9, R^{10} and R^{11} are each independently hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted amino, optionally substituted aryl or optionally substituted arylsulfonyl, and n is an integer of 0 to 6 (hereinafter referred to as "B and R^4 are B-R^4-1"),

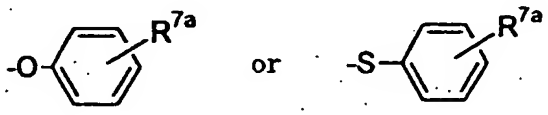
preferably the compound wherein B-R^4 is acyloxy,



wherein R^{7a} is hydrogen,

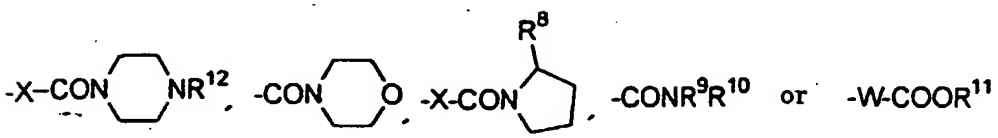


wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted alkyl or optionally substituted phenyl, R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxypheny (hereinafter referred to as "B and R^4 are BR^4-2"), preferably the compo



und wherein B-R^4 is

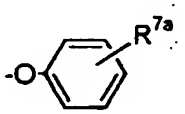
wherein R^{7a} is hydrogen,



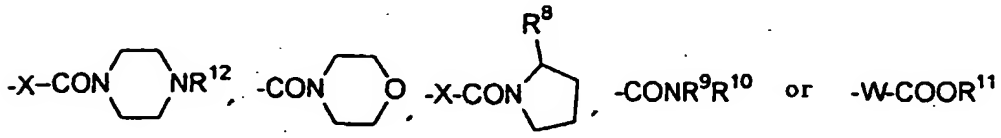
wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is hydrogen or lower alkyl, R^{10} is optionally substituted lower alkyl (wherein the substituent is lower alkylamino, phenyl optionally substituted with halogen, carboxy, or lower alkoxycarbonyl optionally substituted with aryl), lower alkenyl, lower alkylamino, phenylamino, phenyl, or benzenesulfonyl,

R^{11} is hydrogen or optionally substituted lower alkyl (wherein the substituent is lower alkylamino, acyloxy, phenyl optionally substituted with halogen or methylenedioxy, or heterocyclyl), and

R^{12} is C1 to C3 alkyl or cyclohexyl (hereinafter referred to as "B and R^4 are BR^4-3"), preferably the compound wherein B-R^4 is



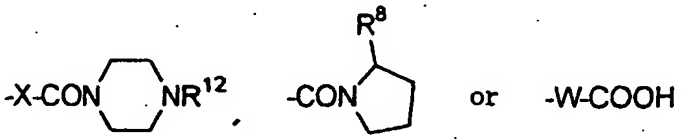
wherein R^{7a} is hydrogen,



wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is hydrogen or lower alkyl, R^{10} is lower alkylamino(lower)alkyl; phenyl(lower)alkyl optionally substituted with halogen: lower alkenyl; phenylamino; or benzenesulfonyl; R^{11} is hydrogen or lower alkyl optionally substituted with phenyl or heterocyclyl, and R^{12} is C1 to C3 alkyl or cyclohexyl,
(hereinafter referred to as "B and R^4 are BR^4-4")

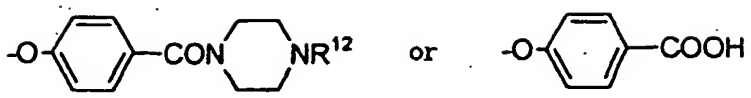
preferably the compound wherein B-R^4 is

wherein R^{7a} is



wherein X is a bond or methylene, R^8 is methyl or carbamoyl, W is a bond, methylene or vinylene, R^{12} is methyl or cyclohexyl (hereinafter referred to as "B and R^4 are BR^4-5"), and

most preferably the compound wherein B-R^4 is



wherein R^{12} is methyl or cyclohexyl (hereinafter referred to as "B and R^4 are BR^4-6"),

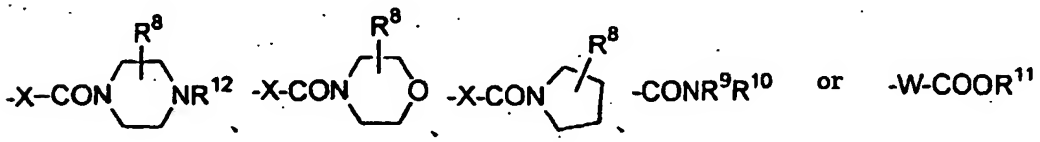
5) the compound wherein R^5 is hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkoxy or optionally substituted aryl (hereinafter referred to as "R^5 is R^5-1"),

the compound wherein R^5 is hydrogen, lower alkyl or phenyl optionally substituted with halogen, lower alkyl or lower alkoxy (hereinafter referred to as "R^5 is R^5-2"),
the compound wherein R^5 is C1 to C3 alkyl or phenyl optionally substituted with halogen, lower alkyl or lower alkoxy (hereinafter referred to as "R^5 is R^5-3"), and
the compound wherein R^5 is methyl or phenyl optionally substituted with lower alkyl (hereinafter referred to as "R^5 is R^5-4"),

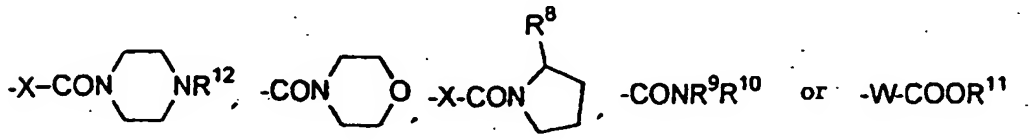
6) the compound wherein R^{6a} and R^{6b} are each independently hydrogen, halogen, lower alkyl, lower alkoxycarbonyl or lower alkoxy, or R^{6a} and R^{6b} taken together may form lower alkylenedioxy (hereinafter referred to as "R^6 is R^6-1"),

the compound wherein both of R^{6a} and R^{6b} are hydrogen, halogen, C1 to C3 alkyl or C1 to C3 alkoxy or R^{6a} and R^{6b} taken together may form methylenedioxy (hereinafter referred to as "R^6 is R^6-2"),
the compound wherein both of R^{6a} and R^{6b} are hydrogen or C1 to C3 alkyl (hereinafter referred to as "R^6 is R^6-3"), and
the compound wherein both of R^{6a} and R^{6b} are hydrogen (hereinafter referred to as "R^6 is R^6-4"),

7) the compound wherein R^{7a} is hydrogen,

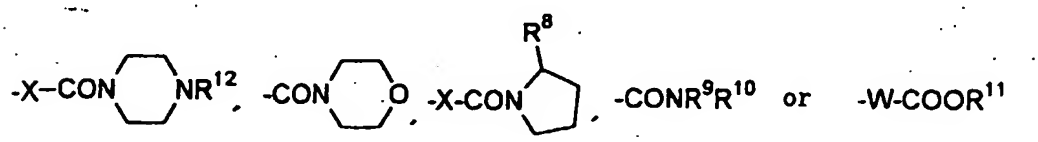


wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted lower alkyl or optionally substituted phenyl, R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl and
R^{7b} is hydrogen (hereinafter R^{7a} and R^{7b} are referred to as "R^7 is R^7-1"), the compound wherein R^{7a} is hydrogen,

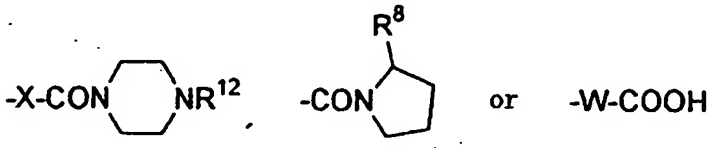


wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is

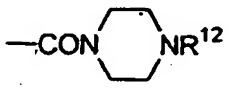
hydrogen or lower alkyl, R^{10} is optionally substituted lower alkyl (wherein the substituent is lower alkylamino, phenyl optionally substituted with halogen, carboxy, or lower alkoxycarbonyl optionally substituted with aryl), lower alkenyl, lower alkylamino, phenylamino, phenyl or benzenesulfonyl, R^{11} is hydrogen or optionally substituted lower alkyl (wherein the substituent is lower alkylamino, acyloxy, phenyl optionally substituted with halogen or methylenedioxy, or heterocyclyl) and R^{12} is cyclohexyl or C1 to C3 alkyl, and
R^{7b} is hydrogen (hereinafter R^{7a} and R^{7b} are referred to as "R^7 is R^7-2"), preferably the compound wherein R^{7a} is



wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is hydrogen or lower alkyl, R^{10} is lower alkylamino(lower)alkyl or lower alkenyl, R^{11} is hydrogen, lower alkylamino(lower)alkyl or benzyl, and R^{12} is methyl or cyclohexyl, and
R^{7b} is hydrogen (hereinafter R^{7a} and R^{7b} are referred to as "R^7 is R^7-3"), preferably the compound wherein R^{7a} is



wherein X is a bond or methylene, R^8 is methyl or carbamoyl, W is a bond, methylene or vinylene, R^{12} is methyl or cyclohexyl and
R^{7b} is hydrogen (hereinafter R^{7a} and R^{7b} are referred to as "R^7 is R^7-4"), and most preferably the compound wherein R^{7a} is



or -COOH
wherein R^{12} is methyl or cyclohexyl (hereinafter R^{7a} and R^{7b} are referred to as "R^7 is R^7-5"),

8) the compound wherein R^8 is lower alkyl or carbamoyl (hereinafter referred to as R^8 is R^8-1"),

preferably the compound wherein R^8 is C1 to C3 alkyl or carbamoyl (hereinafter referred to as "R^8 is R^8-2"), and
preferably the compound wherein R^8 is methyl or carbamoyl (hereinafter referred to as "R^8 is R^8-3"),

9) the compound wherein R^9 is hydrogen or optionally substituted lower alkyl (hereinafter referred to as "R^9 is R^9-1"),

preferably the compound wherein R^9 is hydrogen or lower alkyl (hereinafter referred to as "R^9 is R^9-2"), and
preferably the compound wherein R^9 is hydrogen or C1 to C3 alkyl (hereinafter referred to as "R^9 is R^9-3"),

10) the compound wherein R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino,

arylamino, phenyl or arylsulfonyl (hereinafter referred to as "R^{10} is R^{10}-1"),

preferably the compound wherein R^{10} is optionally substituted lower alkyl (wherein the substituent is lower alkylamino, phenyl optionally substituted with halogen, carboxy, or lower alkoxycarbonyl optionally substituted with aryl); lower alkenyl; lower alkylamino; phenylamino; phenyl; or benzenesulfonyl (hereinafter referred to as "R^{10} is R^{10}-2"), more preferably the compound wherein R^{10} is lower alkyl optionally substituted with lower alkylamino, phenyl optionally substituted with halogen, carboxy or aryl(lower)alkoxycarbonyl; lower alkenyl; or phenylamino (hereinafter referred to as "R^{10} is R^{10}-3"), and
preferably the compound wherein R^{10} is lower alkylamino(lower)alkyl, phenyl(lower)alkyl, halogenophenyl(lower)alkyl or phenylamino (hereinafter referred to as "R^{10} is R^{10}-4")

11) the compound wherein R^{11} is hydrogen, optionally substituted lower alkyl or optionally substituted phenyl (hereinafter referred to as "R^{11} is R^{11}-1"),

preferably the compound wherein R^{11} is hydrogen or optionally substituted lower alkyl wherein the substituent is lower alkylamino, acyloxy, optionally substituted phenyl wherein the substituent is halogen or methylenedioxy, or heterocyclyl (hereinafter referred to as "R^{11} is R^{11}-2"),
preferably the compound wherein R^{11} is hydrogen, lower alkylamino(lower)alkyl or phenylalkyl (hereinafter referred to as "R^{11} is R^{11}-3"), and
most preferably the compound wherein R^{11} is hydrogen (hereinafter referred to as "R^{11} is R^{11}-4"),

12) the compound wherein R^{12} is cycloalkyl, pyrimidyl or lower alkyl optionally substituted with methylenedioxyophenyl (hereinafter referred to as "R^{12} is R^{12}-1"),

the compound wherein R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl (hereinafter referred to as "R^{12} is R^{12}-2"),
the compound wherein R^{12} is C1 to C3 alkyl or cycloalkyl (hereinafter referred to as "R^{12} is R^{12}-3"), and
most preferably the compound wherein R^{12} is methyl or cyclohexyl (hereinafter referred to as "R^{12} is R^{12}-4"),

13) the compound wherein R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted amino or optionally substituted lower alkylthio, and R^{13a} and R^{13b} taken together may form methylenedioxy (hereinafter referred to as "R^{13} is R^{13}-1"),

preferably the compound wherein R^{13a} is hydrogen, lower alkyl, lower alkoxy, lower alkylamino or lower alkylthio and R^{13b} is hydrogen (hereinafter referred to as "R^{13} is R^{13}-2"),
the compound wherein R^{13a} and R^{13b} are each independently hydrogen or lower alkoxy (hereinafter referred to as "R^{13} is R^{13}-3"),
the compound wherein R^{13a} is hydrogen or C1 to C3 lower alkoxy at *o*-position and R^{13b} is hydrogen (hereinafter referred to as "R^{13} is R^{13}-4"), and
the compound wherein both of R^{13a} and R^{13b} are hydrogen (hereinafter referred to as "R^{13} is R^{13}-5"),

14) the compound wherein R^{14} is hydrogen (hereinafter referred to as "R^{14} is R^{14}-1"),
15) the compound wherein A and R^1 are AR^1-1, R^2 is R^2-1 and R^3 is R^3-1,

preferably the compound wherein A and R^1 are AR^1-2, R^2 is R^2-2 and R^3 is R^3-2,
more preferably the compound wherein A and R^1 are AR^1-3, R^2 is R^2-3 and R^3 is R^3-3,
preferably the compound wherein A and R^1 are AR^1-4, R^2 is R^2-4 and R^3 is R^3-3,
preferably the compound wherein A and R^1 are AR^1-5, R^2 is R^2-5 and R^3 is R^3-3,
preferably the compound wherein A and R^1 are AR^1-5, R^2 is R^2-6 and R^3 is R^3-3, and
most preferably the compound wherein A and R^1 are AR^1-6, R^2 is R^2-7 and R^3 is R^3-3,

16) the compound wherein A and R1 are AR^1-1, R^2 is R^2-1 and BR^4 is BR^4-1,

preferably the compound wherein A and R^1 are AR^1-2, R^2 is R^2-2 and BR^4 is BR^4-2,
preferably the compound wherein A and R^1 are AR^1-3, R^2 is R^2-3 and BR^4 is BR^4-3,
preferably the compound wherein A and R^1 are AR^1-4, R^2 is R^2-4 and BR^4 is BR^4-4,
preferably the compound wherein A and R^1 are AR^1-5, R^2 is R^2-5 and BR^4 is BR^4-5,
preferably the compound wherein A and R^1 are AR^1-5, R^2 is R^2-6 and BR^4 is BR^4-5,

most preferably the compound wherein A and R^1 are AR^1-5, R^2 is R^2-7 and BR^4 is BR^4-5,

17) the compound wherein A and R^1 are AR^1-1, R^3 is R^3-1 and BR^4 is BR^4-1,

preferably the compound wherein A and R^1 are AR^1-2, R^3 is R^3-2 and BR^4 is BR^4-2,
preferably the compound wherein A and R^1 are AR^1-3, R^3 is R^3-3 and BR^4 is BR^4-3,
preferably the compound wherein A and R^1 are AR^1-4, R^3 is R^3-3 and BR^4 is BR^4-4,
mots preferably the compound whereinA and R^1 are AR^1-5, R^3 is R^3-3 and BR^4 is BR^4-5,

18) the compound wherein R^2 is R^2-1, R^3 is R^3-1 and BR^4 is BR^4-1,

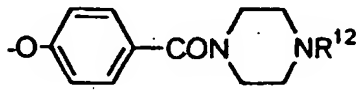
preferably the compound wherein R^2 is R^2-2, R^3 is R^3-2 and BR^4 is BR^4-2,
preferably the compound wherein R^2 is R^2-3, R^3 is R^3-3 and BR^4 is BR^4-3,
preferably the compound wherein R^2 is R^2-4, R^3 is R^3-3 and BR^4 is BR^4-4,
preferably the compound wherein R^2 is R^2-5, R^3 is R^3-3 and BR^4 is BR^4-4,
preferably the compound wherein R^2 is R^2-6, R^3 is R^3-3 and BR^4 is BR^4-4,
preferably the compound wherein R^2 is R^2-7, R^3 is R^3-3 and BR^4 is BR^4-4,
most preferably the compound wherein R^2 is R^2-7, R^3 is R^3-3 and BR^4 is BR^4-5,

19) the compound wherein the combination of A and R^1, R^2, R^3, and B and R^4 is as follows:

(AR^1-1, R^2-1, R^3-2, BR^4-2), (AR^1-1, R^2-1, R^3-3, BR^4-3),
(AR^1-1, R^2-2, R^3-1, BR^4-2), (AR^1-1, R^2-2, R^3-1, BR^4-3), (AR^1-1, R^2-2, R^3-1, BR^4-4),
(AR^1-1, R^2-2, R^3-1, BR^4-5), (AR^1-1, R^2-2, R^3-2, BR^4-1), (AR^1-1, R^2-2, R^3-2, BR^4-2),
(AR^1-1, R^2-2, R^3-2, BR^4-3), (AR^1-1, R^2-2, R^3-2, BR^4-4), (AR^1-1, R^2-2, R^3-2, BR^4-5),
(AR^1-1, R^2-2, R^3-3, BR^4-2), (AR^1-1, R^2-2, R^3-3, BR^4-3), (AR^1-1, R^2-2, R^3-3, BR^4-4),
(AR^1-1, R^2-2, R^3-3, BR^4-5),
(AR^1-1, R^2-3, R^3-1, BR^4-2), (AR^1-1, R^2-3, R^3-1, BR^4-3), (AR^1-1, R^2-3, R^3-1, BR^4-4),
(AR^1-1, R^2-3, R^3-1, BR^4-5), (AR^1-1, R^2-3, R^3-2, BR^4-2), (AR^1-1, R^2-3, R^3-2, BR^4-3),
(AR^1-1, R^2-3, R^3-2, BR^4-4), (AR^1-1, R^2-3, R^3-2, BR^4-5), (AR^1-1, R^2-3, R^3-3, BR^4-1),
(AR^1-1, R^2-3, R^3-3, BR^4-2), (AR^1-1, R^2-3, R^3-3, BR^4-3), (AR^1-1, R^2-3, R^3-3, BR^4-4),
(AR^1-1 R^2-3, R^3-3, BR^4-5),
(AR^1-1, R^2-4, R^3-1, BR^4-2), (AR^1-1, R^2-4, R^3-1, BR^4-3), (AR^1-1, R^2-4, R^3-1, BR^4-4),
(AR^1-1, R^2-4, R^3-1, BR^4-5), (AR^1-1, R^2-4, R^3-2, BR^4-2), (AR^1-1, R^2-4, R^3-2, BR^4-3),
(AR^1-1, R^2-4, R^3-2, BR^4-4), (AR^1-1, R^2-4, R^3-2, BR^4-5), (AR^1-1, R^2-4, R^3-3, BR^4-2),
(AR^1-1, R^2-4, R^3-3, BR^4-3), (AR^1-1, R^2-4, R^3-3, BR^4-4), (AR^1-1, R^2-4, R^3-3, BR^4-5),
(AR^1-1, R^2-6, R^3-1, BR^4-2), (AR^1-1, R^2-6, R^3-1, BR^4-3), (AR^1-1, R^2-6, R^3-1, BR^4-4),
(AR^1-1, R^2-6, R^3-1, BR^4-5), (AR^1-1, R^2-6, R^3-2, BR^4-2), (AR^1-1, R^2-6, R^3-2, BR^4-3),
(AR^1-1, R^2-6, R^3-2, BR^4-4), (AR^1-1, R^2-6, R^3-2, BR^4-5), (AR^1-1, R^2-6, R^3-3, BR^4-2),
(AR^1-1, R^2-6, R^3-3, BR^4-3), (AR^1-1, R^2-6, R^3-3, BR^4-4), (AR^1-1, R^2-6, R^3-3, BR^4-5),
(AR^1-2, R^2-1, R^3-1, BR^4-2), (AR^1-2, R^2-1, R^3-2, BR^4-1),
(AR^1-2, R^2-2, R^3-1, BR^4-1), (AR^1-2, R^2-2, R^3-3, BR^4-3),
AR^1-2, R^2-3, R^3-2, BR^4-3), (AR^1-2, R^2-3, R^3-3, BR^4-2),
(AR^1-2, R^2-4, R^3-2, BR^4-5),
(AR^1-2, R^2-6, R^3-3, BR^4-3),
(AR^1-2, R^2-7, R^3-3, BR^4-3),
(AR^1-3, R^2-2, R^3-1, BR^4-2), (AR^1-3, R^2-2, R^3-1, BR^4-3), (AR^1-3, R^2-2, R^3-1, BR^4-4),
(AR^1-3, R^2-2, R^3-1, BR^4-5), (AR^1-3, R^2-2, R^3-2, BR^4-2), (AR^1-3, R^2-2, R^3-2, BR^4-3),
(AR^1-3, R^2-2, R^3-2, BR^4-4), (AR^1-3, R^2-2, R^3-2, BR^4-5), (AR^1-3, R^2-2, R^3-3, BR^4-2),
(AR^1-3, R^2-2, R^3-3, BR^4-3), (AR^1-3, R^2-2, R^3-3, BR^4-4), (AR^1-3, R^2-2, R^3-3, BR^4-5),
(AR^1-3, R^2-3, R^3-1, BR^4-2), (AR^1-3, R^2-3, R^3-1, BR^4-3), (AR^1-3, R^2-3, R^3-1, BR^4-4),
(AR^1-3, R^2-3, R^3-1, BR^4-5), (AR^1-3, R^2-3, R^3-2, BR^4-2), (AR^1-3 R^2-3, R^3-2, BR^4-3),
(AR^1-3, R^2-3, R^3-2, BR^4-4), (AR^1-3, R^2-3, R^3-2, BR^4-5), (AR^1-3, R^2-3, R^3-3, BR^4-2),
(AR^1-3, R^2-3, R^3-3, BR^4-3), (AR^1-3, R^2-3, R^3-3, BR^4-4), (AR^1-3, R^2-3, R^3-3, BR^4-5),
(AR^1-3, R^2-4, R^3-1, BR^4-2), (AR^1-3, R^2-4, R^3-1, BR^4-3), (AR^1-3, R^2-4, R^3-1, BR^4-4),
(AR^1-3, R^2-4, R^3-1, BR^4-5), (AR^1-3, R^2-4, R^3-2, BR^4-2), (AR^1-3, R^2-4 R^3-2, BR^4-3),
(AR^1-3, R^2-4, R^3-2, BR^4-4), (AR^1-3, R^2-4, R^3-2, BR^4-5), (AR^1-3, R^2-4, R^3-3, BR^4-2),
(AR^1-3, R^2-4, R^3-3, BR^4-3), (AR^1-3, R^2-4, R^3-3, BR^4-4), (AR^1-3, R^2-4, R^3-3, BR^4-5),

(AR^1-3, R^2-5, R^3-3, BR^4-3),
(AR^1-3, R^2-6, R^3-1, BR^4-2), (AR^1-3, R^2-6, R^3-1, BR^4-3), (AR^1-3, R^2-6, R^3-1, BR^4-4),
(AR^1-3, R^2-6, R^3-1, BR^4-5), (AR^1-3, R^2-6, R^3-2, BR^4-2), (AR^1-3, R^2-6, R^3-2, BR^4-3),
(AR^1-3, R^2-6, R^3-2, BR^4-4), (AR^1-3, R^2-6, R^3-2, BR^4-5), (AR^1-3, R^2-6, R^3-3, BR^4-2),
(AR^1-3, R^2-6, R^3-3, BR^4-3), (AR^1-3, R^2-6, R^3-3, BR^4-4), (AR^1-3, R^2-6, R^3-3, BR^4-5),
(AR^1-3, R^2-7 R^3-3, BR^4-6),
(AR^1-4, R^2-7, R^3-3, BR^4-1), (AR^1-4, R^2-7, R^3-3, BR^4-3),
(AR^1-5, R^2-2, R^3-1, BR^4-2), (AR^1-5, R^2-2, R^3-1, BR^4-3), (AR^1-5, R^2-2, R^3-1, BR^4-4),
(AR^1-5, R^2-2, R^3-1, BR^4-5), (AR^1-5, R^2-2, R^3-2, BR^4-2), (AR^1-5, R^2-2, R^3-2, BR^4-3),
(AR^1-5, R^2-2, R^3-2, BR^4-4), (AR^1-5, R^2-2, R^3-2, BR^4-5), (AR^1-5, R^2-2, R^3-3, BR^4-2),
(AR^1-5, R^2-2, R^3-3, BR^4-3), (AR^1-5, R^2-2, R^3-3, BR^4-4), (AR^1-5, R^2-2, R^3-3, BR^4-5),
(AR^1-5, R^2-3, R^3-1, BR^4-2), (AR^1-5, R^2-3, R^3-1, BR^4-3), (AR^1-5, R^2-3, R^3-1, BR^4-4),
(AR^1-5, R^2-3, R^3-1, BR^4-5), (AR^1-5, R^2-3, R^3-2, BR^4-2), (AR^1-5, R^2-3, R^3-2, BR^4-3),
(AR^1-5, R^2-3, R^3-2, BR^4-4), (AR^1-5, R^2-3, R^3-2, BR^4-5), (AR^1-5, R^2-3, R^3-3, BR^4-2),
(AR^1-5, R^2-3, R^3-3, BR^4-3), (AR^1-5, R^2-3, R^3-3, BR^4-4), (AR^1-5, R^2-3, R^3-3, BR^4-5),
(AR^1-5, R^2-4, R^3-1, BR^4-2), (AR^1-5, R^2-4, R^3-1, BR^4-3), (AR^1-5, R^2-4, R^3-1, BR^4-4),
(AR^1-5, R^2-4, R^3-1, BR^4-5), (AR^1-5, R^2-4, R^3-2, BR^4-2), (AR^1-5, R^2-4, R^3-2, BR^4-3),
(AR^1-5, R^2-4, R^3-2, BR^4-4), (AR^1-5, R^2-4, R^3-2, BR^4-5), (AR^1-5, R^2-4, R^3-3, BR^4-2),
(AR^1-5, R^2-4, R^3-3, BR^4-3), (AR^1-5, R^2-4, R^3-3, BR^4-4), (AR^1-5, R^2-4, R^3-3, BR^4-5),
(AR^1-5, R^2-6, R^3-1, BR^4-2), (AR^1-5, R^2-6, R^3-1, BR^4-3), (AR^1-5, R^2-6, R^3-1, BR^4-4),
(AR^1-5, R^2-6, R^3-1, BR^4-5), (AR^1-5, R^2-6, R^3-2, BR^4-2), (AR^1-5, R^2-6, R^3-2, BR^4-3),
(AR^1-5, R^2-6, R^3-2, BR^4-4), (AR^1-5, R^2-6, R^3-2, BR^4-5), (AR^1-5, R^2-6, R^3-3, BR^4-2),
(AR^1-5, R^2-6, R^3-3, BR^4-3), (AR^1-5, R^2-6, R^3-3, BR^4-4), (AR^1-5, R^2-6, R^3-3, BR^4-5),
(AR^1-5, R^2-6, R^3-3, BR^4-6),
(AR^1-5, R^2-7, R^3-3, BR^4-1), (AR^1-5, R^2-7, R^3-3, BR^4-3), (AR^1-5, R^2-7, R^3-3, BR^4-6),
(AR^1-6, R^2-1, R^3-1, BR^4-3), (AR^1-6, R^2-1, R^3-3, BR^4-1),
(AR^1-6, R^2-2, R^3-2, BR^4-3), (AR^1-6, R^2-2, R^3-3, BR^4-2),
(AR^1-6, R^2-3, R^3-1, BR^4-1), (AR^1-6, R^2-3, R^3-2, BR^4-2),
(AR^1-6, R^2-4, R^3-3, BR^4-5),
(AR^1-6, R^2-6, R^3-3, BR^4-6)
(AR^1-6, R^2-7, R^3-3, BR^4-1), (AR^1-6, R^2-7, R^3-3, BR^4-2), (AR^1-6, R^2-7, R^3-3, BR^4-3),
(AR^1-6, R^2-7, R^3-3, BR^4-4), (AR^1-6, R^2-7, R^3-3, BR^4-5) and (AR^1-6, R^2-7 R^3-3, BR^4-6)

20) the compound wherein A-R^1 is -CONHCHR^5Ph and R^2 is benzyl, R^3 is C1 to C3 alkyl, B-R^4 is



and R^5 and R^{12} are each independently C1 to C3 alkyl,

21) the compound wherein carbon atoms at the 3- and 4-positions are asymmetric carbon atoms and the configuration is 3-β, preferably the compound wherein the configuration is 3-β, 4-β.

[0045] The compound (I) of the present invention can be synthesized by obtaining azetidin-2-on compound from vinyl acetate according to the method described in Org. Synth. 1986, 65, 135, followed by introducing objective substituents by the usual methods.

[0046] For example, the compound of the above formula (I) wherein A is -CO- can be obtained by synthesizing an azetidin-2-on compound wherein A-R^1 is hydrogen to react with an acid anhydride or a halogenide having an objective substituent R^1. The reaction may be carried out in a solvent such as dimethylformamide, tetrahydrofuran, dichloromethane or dioxane, in the presence of an organic base such as pyridine, DMAP, triethylamine or diisopropylethylamine or a base such as sodium hydride, lithium hydride, potassium hydride, or lithium bis(trimethylsilyl)amide, under —60 °C to heating, preferably —50 °C to 50 °C for several minutes to several hours, preferably 1 to 3 hours.

[0047] A compound wherein A is -COO- can be obtained by a reaction of a compound wherein A-R^1 is hydrogen with Hal-COOR^1 in the presence of a base such as potassium carbonate, sodium hydride, LiHMDS or LDA. The reaction may be carried out in a solvent such as dimethylformamide, tetrahydrofuran, dichloromethane or dioxane at —60 °C to room temperature for several minutes to several hours to obtain the objective compound.

[0048] A compound wherein A is -COCO- can be obtained by a reaction of a compound wherein A-R^1 is hydrogen with di-ketone-halogen compound having the substituent R^1. The reaction may be carried out in a solvent such as dimethylformamide, tetrahydrofuran, dichloromethane or dioxane at —60 °C to room temperature for several minutes to several hours.

[0049] A compound wherein A is -CONH- may be obtained by a reaction of a compound wherein A-R^1 is hydrogen with an isocyanate compound having an objective substituent R^1. The reaction may be carried out in a solvent such as methylene chloride, acetonitrile, dimethylformamide, tetrahydrofuran or dioxane in the presence of an organic base such as DBU, pyridine, DMAP, triethylamine or diisopropylethylamine or a base such as sodium hydride, lithium hydride, or potassium hydride under ice-cooling to heating, preferably at 5 °C to 25 °C for several minutes to several hours, preferably 5 to 16 hours.

[0050] A compound wherein A is -CONH- can be obtained by a reaction of, R^1COOH with an azide compound such as diphenylphosphoryl azide or sodium azide to give an isocyanate compound via acyl azide, followed by a reaction with an azetizine-2-one compound wherein A-R^1 is hydrogen (Curtius rearrangement). R^1COOH and the azide compound may be reacted in a solvent such as methylene chloride, acetonitrile, toluene, t-butyl alcohol, benzyl alcohol, tetrahydrofuran or dioxane in the presence of an organic base such as pyridine, DBU, DMAP, triethylamine or diisopropylethylamine, or a base such as sodium hydride, lithium hydride or potassium hydride under ice-cooling to heating, preferably at 0 °C to 50 °C for several minutes to several hours, preferably 1 to 16 hours.

[0051] A compound wherein A is -SO_2- can be obtained by a reaction of an azetizine-2-one compound wherein A-R^1 is hydrogen with a sulfonyl halide compound having an objective substituent R^1. The reaction may be carried out in a solvent such as dichloromethane, dimethylformamide, toluene. tetorahydrofuran or dioxane, in the presence of an organic base such as pyridine, DMAP, triethylamine, or diisopropylethylamine or a base such as sodium hydride, lithium hydride, potassium hydride or lithium bis(trimethylsilyl)amide at —80°C to heating, preferably —60°C to 25°C for several minutes to several hours, preferably about 2 hours to obtain the objective compound.

[0052] Alternatively, the objective compound can be synthesized by reacting sulfonylisocyanate with silylenol ether according to the method described in J. Organomet. Chem., 164 (1979) 123 — 134.

[0053] A compound wherein BR^4 is -S- or -O- can be obtained by a reaction of a compound wherein BR^4 is acyloxy, which can be synthesized according to the method described in the above-mentioned Org. Synth. 1986, 65, 135, with a mercapt compound or a hydroxy compound having an objective substituent R^4. The reaction may be carried out in a solvent such as acetone, methanol, ethanol, dimethylformamide, tetrahydrofuran or dioxane in the presence of an organic base such as pyridine, DMAP, triethylamine or diisopropylethylamine or a base such a sodium hydride, lithium hydride, potassium hydride or sodium hydroxide under ic-cooling to heating, preferably at 0 °C to 50 °C for several minutes to several hours, preferably 3 hours.

[0054] A compound wherein B is -SO_2- or -SO- can be synthesized by oxidation of the above-mentioned compound wherein B is -S- obtained. The oxidation may be carried out in a solvent such as methylene chloride or tetrahydrofuran, with an oxidizing agent such as m-chloro perbenzoic acid, peracetic acid, perbenzoic acid, hydrogen peroxide, pertrifluoroacetic acid, sodium periodic acid, sodium hypochlorite, or potassium permanganic acid under ice-cooling to heating, preferably at 0 °C to 50 °C for several minutes to several hours, preferably 3 hours.

[0055] A compound wherein BR^4 is hydrogen can be synthesized by reducing the compound wherein R^4 is phenylthio which is obtained by the above-mentioned method or the usual methods. The compound may be reduced in a solvent such as benzene or toluene with an reducing agent such as tributyltin under ice-cooling to heating, preferably at 0 °C to 150 °C for several minutes to several hours, preferably 1 hour. In this reaction, the objective compound can be preferably synthesized in the presence of a free radical initiator such as AIBN or dibenzoylperoxide.

[0056] A compound wherein R^2 or R^3 is the substituent other than hydrogen can be obtained by a reaction of an azetizine-2-one compound wherein R^2 and R^3 are simultaneously hydrogen with a halogen compound having the objective substituent R^2 or R^3. These compounds may be reacted in a solvent such as tetrahydrofuran or diethyl ether at -80°C to room temperature, preferably -60°C to 0°C for several minutes to several hours, preferably 2 hours.

[0057] Each substituent of thus obtained compounds can be converted into a suitable substituent by the usual methods.

[0058] When a compound has a substituent interfering with the above reaction, the substituent may be protected with a suitable protecting group in advance and the protecting group may be removed in a suitable step by the usual methods. For example, lower alkoxycarbonyl such as t-butyloxycarbonyl, lower alkenyloxycarbonyl such as vinyloxycarbonyl, or aryloxycarbonyl, aralkyloxycarbonyl such as benzyloxycarbonyl, p-methoxybenzylcarbonyl, o-nitrobenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, or phenyloxycarbonyl, tri(lower)alkylsilyl such as trimethylsilyl, triehylsilyl or t-butyldimethylsilyl, acyl such as acetyl, halogenoacetyl, pivaloyl, benzoyl, or toluoyl, lower alkylsulfonyl such as methanesulfonyl, trifluoroethanesulfonyl, toluenesulfonyl, or 4-t-butylbenzenesulfonyl can be used as an amino protecting group.

[0059] Thus obtained compound of the present invention can be converted into a prodrug thereof. The term "prodrug" includes derivatives of the compounds of the present invention which have a chemically or metabolically decom-

posable group and can be converted into pharmaceutically active compounds of the present invention in vivo by solvolysis or under the physiological conditions. The methods for selecting and producing suitable prodrugs are described in Design of Prodrugs, Elsevier, Amsterdam 1985.

[0060] When a compound of the present invention has carboxy, examples of prodrugs are an ester derivative, or an amide derivative, which can be produced by reacting a carboxy compound with a suitable alcohol or a suitable amine, respectively. More preferable ester derivatives as prodrugs are methyl ester, ethyl ester, n-propyl ester, isopropyl ester, n-butyl ester, isobutyl ester, tert-butyl ester, molpholinoethyl ester, and N, N-diethylglycolamide ester.

[0061] When a compound of the present invention has hydroxy, an example of a prodrug is an acyloxy derivative, which can be synthesized by reacting a compound having hydroxy with a suitable acyl halide or a suitable acid anhydride. Acyloxy groups preferable for prodrugs are $-OCOC_2H_5$, -OCO(t-Bu), $-OCOC_{15}H_{31}$, -OCO(m-COONa-Ph), $-OCOCH_2CH_2COONa$, $-OCOCH(NH_2)CH_3$, and $-OCOCH_2N(CH_3)_2$.

[0062] When a compound of the present invention has amino, an example of a prodrug is an amide derivative, which can be synthesized by reacting a compound having amino with a suitable acid halogeno compound or a suitable mixed acid anhydride. Amide groups preferable for prodrugs are $-NHCO(CH_2)_{20}CH_3$, $-NHCOCH(NH_2)CH_3$, and $-NHCOOCH_2OCOCH_3$.

[0063] Chymase inhibitors of the present invention have a high oral absorbability and stability in blood as well as potent chymase inhibitory activity, and they are effective in all of the diseases caused by angiotensin II or chymase. Additionally, they have cytokine production inhibitory activity and show potent preventive and/or therapeutic effect for inflammatory diseases, allergic diseases and circulatory system diseases.

[0064] The objective diseases are, for example, various postoperative organ adhesions, stenosis after vascular transplantation, dysfunction or insufficiency of a transplanted tissue, aberrant growth or hyperplasia of a transplanted organ and peripheral tissue, formation of keloid and cicatrice, chronic inflammatory diseases with fibrosis such as cardiac insufficiency or myocardosis after myocardial infarction, cystic fibrosis, interstitial fibrosis, rheumatics, asthma, atopic dermatitis, non-atopic dermatitis, arthritis, psoriasis, hepatitis, hepatocirrhosis, inflammatory eye diseases such as conjunctivitis, scleroderma, nephritis, colitis, Crohn disease, septic shock, myocardial infarction, cardiac insufficiency, hypercardia, cardiac myopathy, congestive heat diseases, hypertension, vascular intimal hyperplasia after PTCA (percutaneous transluminal coronary angioplasty), peripheral circulatory disorder, vasculitis, arteriosclerosis, revascularization, diabetic or non-diabetic nephropathy, stroke and Alzheimer's disease. The chymase inhibitor can be used also as an immunosuppressive agent.

[0065] While having potent chymase inhibitory activity, the chymase inhibitor of the present invention has no or very weak inhibitory activity on elastase, trypsin, thrombin, and plasmin which are serine proteases like chymase. Thus, the chymase inhibitor of the present invention has a high selectivity for chymase and can be a reagent useful for physiological research of chymase.

[0066] A compound of the present invention can be administered orally or parenterally as a chymase inhibitor and/or cytokine production inhibitor. In the case of oral administration, it may be in any usual form such as tablets, granules, powders, capsules, pills, solutions, syrups, buccal tablets and sublingual tablets. When the compound is parenterally administered, any usual form is preferable, for example, injections (e.g., intravenous, intramuscular), suppositories, endermic agents, vapors and ophthalmic solutions. Oral administration is particularly preferable because the compounds of the present invention show high oral absorbability.

[0067] A pharmaceutical composition may be manufactured by mixing an effective amount of a compound of the present invention with various pharmaceutical additives suitable for the administration form, such as excipients, binders, moistening agents, disintegrators, lubricants and diluents. When the composition is for injection, an active ingredient can be sterilized with a suitable carrier to give a pharmaceutical composition.

[0068] Examples of excipients include lactose, saccharose, glucose, starch, calcium carbonate and crystalline cellulose. Examples of binders include methylcellulose, carboxymethylcellulose, hydroxypropylcellulose, gelatin and polyvinylpyrrolidone. Examples of disintegrators include carboxymethylcellulose, sodium carboxymethylcellulose, starch, sodium alginate, agar and sodium lauryl sulfate. Examples of lubricants include talc, magnesium stearate and macrogol. Cacao oil macrogol and methyl cellulose may be used as base materials for suppositories. When the composition is manufactured as solutions, emulsified injections or suspended injections, dissolving accelerators, suspending agents, emulsifiers, stabilizers, preservatives and isotonic agents may be added. For oral administration, sweetening agents and flavors may be added.

[0069] Although the dosage of a compound of the present invention as a chymase inhibitor and/or cytokine production inhibitor should be determined taking into account the patient's age and body weight, the type and degree of disease and the administration route, a usual oral dosage for adults is 0.05-100 mg/kg/day and preferably 0.01-10 mg/kg/day. For parenteral administration, although the dosage varies highly with administration route, a usual dosage os 0.005-10 mg/kg/day, preferably, 0.01-1 mg/kg/day. The dosage may be administered in a single or several divisions per day.

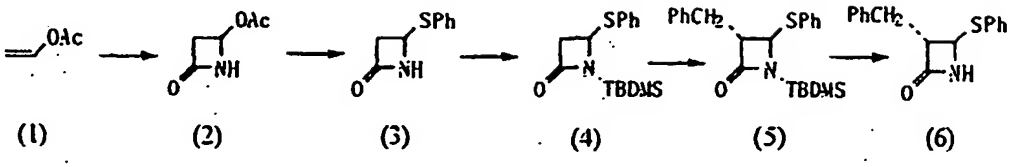
[0070] The present invention is further explained by the following Examples and Experiments, which are not

intended to limit the scope of the present invention.

Examples

Reference Example Compound (6)

[0071]



(Step 1) 4-Acetoxy-azetidine-2-one(2)

[0072] Title compound was synthesized by the method described in Org. Synth. 1986, 65, 135. Submitted by S. J. Mickel and modified by Chi-Nung Hsiao and M. J. Miller.

(Step 2) 4-Phenylthio-azetidine-2-one(3)

[0073] To a solution of 20.7 ml of thiophenol (1.3 eq) in acetone (40 ml) was added dropwise 185 ml of N-NaOH (1.2 eq) at 5 to 10 °C and the mixture was stirred at the same temperature for 10 minutes. A solution of 20 g of Compound (2) (155 mmol) in acetone (80 ml) was added dropwise thereto at the same temperature. The mixture was stirred at 10 to 15 °C for 3 hours, poured into ice-cooling water and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 31 g of an oil residue (3).

NMR:H^1,$CDCl_3$(δ),2.85-2.94(m,1H),3.22-3.45(m,1H),4.99-5.03(m,1H),6.31(br, 1H),7.34-7.60(m,5H)

(Step 3) 4-Phenylthio-N-(t-butyldimethylsilyl)-azetidine-2-one(4)

[0074] To a solution of 31 g of Compound (3) (155 mmol) in methylene chloride (200 ml) were added 29.2 g of t-butyldimethylsilyl chloride (1.25 eq) and 27 ml of triethylamine (1.25 eq) at 5 °C. The mixture was stirred for 16 hours at the same temperature, poured into a diluted aqueous solution of ammonium chloride and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 50 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 37.9 g of an oil material (4) (83 % from (2)).

NMR:H^1,$CDCl_3$(δ),0.02(s,6H),0.70(s,9H),2.70,2.77 (d,J=2.4Hz,1H),3.15,3.23 (d,J=5.0Hz,1H), 4.59-4.63(m,1H),7.01-7.18(m,5H)

(Step 4) 3-Benzyl-4-phenylthio-N-(t-butyldimethylsilyl)-azetidine-2-one(5)

[0075] To a solution of 16.4 g of Compound (4) (56 mmol) in tetrahydrofuran (164 ml) were added 10 ml of benzyl bromide (1.5 eq) and added dropwise 42 ml of 2M LDA (1.5 eq) over 10 minutes at —76 °C. The mixture was stirred at the same temperature for 10 minutes, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 27 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 12.3 g of an oil material (5) (59 %).

NMR:H^1,$CDCl_3$(δ), 0.22(s,6H),0.69(s,9H),2.78(d,J=6.4Hz,2H), 3.31,3.44 (d,d,J=2.3,6.4Hz,1H), 4.37(d,J=2.3Hz,1H),6.90-7.15(m,10H)
IR: ν;$CHCl_3$;1742 cm^{-1}

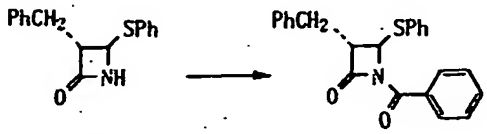
(Step 5) 3-Benzyl-4-phenylthio-azetidine-2-one(6)

[0076] To a solution of 11.5 g of Compound (5) (31 mmol) in tetrahydrofuran (77 ml) were added 2.12 ml of acetic acid (1.2 eq) and 77 ml of 1M n-Bu_4NF/THF (1.2 eq). The mixture was stirred at 25 °C for 30 minutes, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 9.78 g of a crystalline residue. The residue was recrystallized from n-hexane: ethyl acetate to give 7.22 g of Compound (6) (87 %:mp. 119-120 °C).

NMR:H^1,$CDCl_3$(δ)2.90.3.20(m,2H),3.35-3.40(m,1H),4.68(d,J=2.2Hz,1H),6.20(br, 1H),7.20-7.50(m,10H)
IR: ν;$CHCl_3$;3400,1766 cm^{-1}

Example 1 Compound (I-1)

[0077]

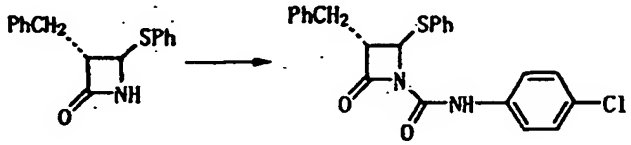


(6) (I-1)

[0078] To a solution of 454 mg of Compound (6) (1.65 mmol) in dimethylformamide (5.0 ml) was added 0.23 ml of benzyl chloride (1.2 eq), followed by addition of 80 mg of 60 % NaH (1.2 eq) at 5 °C. The mixture was stirred at the same temperature for 3 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.85 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 314 mg of an oil material (I-1) (58 %).

Example 2 Compound (I-7)

[0079]

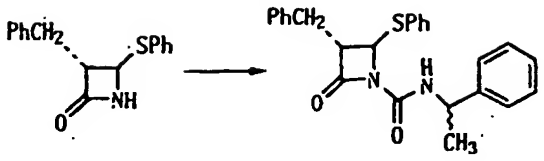


(6) (I-7)

[0080] To a solution of 350 mg of Compound (6) (1.30 mmol) in methylene chloride (4.0 ml) were added 441 mg of p-chlorophenylisocyanate (2.0 eq), 0.36 ml of triethylamine(2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.85 g of an oil residue. The residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 150 mg of a crystalline material (I-7) (26 %).

Example 3 Compound (I-14)

[0081]

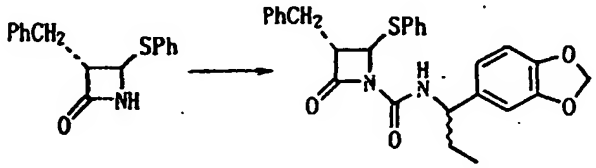


(6) (I-14)

[0082] To a solution of 3.50 mg of Compound (6) (1.30 mmol) in methylene chloride (4.0 ml) were added 0.38 ml of 1-phenyl-ethylisocyanate (2.0 eq), 0.36 ml of triethylamine (2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.80 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 520 mg of an oil material (I-14) (96%).

Example 4 Compound (I-21)

[0083]

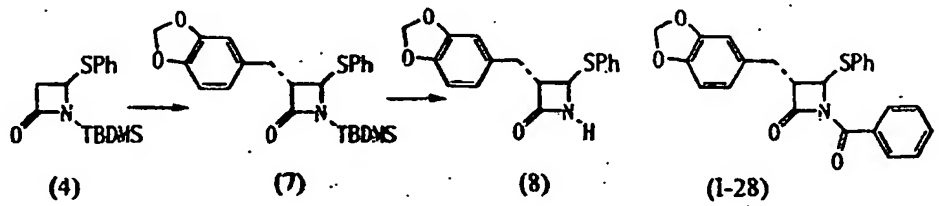


(6) (I-21)

[0084] To a solution of 0.52 g of 2-(3,4-methylenedioxyphenyl) butyric acid (2.5 eq) in methylene chloride (5.0 ml) were added 0.54 ml of diphenylphosphoryl azide (2.5 eq) and 0.35 ml of triethylamine (2.5 eq) at 25 °C and the mixture was stirred for 2 hours. To the mixture were added 269 mg of Compound (6) (1.0 mmol), 0.35 ml of triethylamine (2.5 eq) and catalytic amounts of DMAP. The mixture was stirred at 45 °C for 4 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.80 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 440 mg of an oil material (I-21) (96 %).

Example 5 Compound (I-28)

[0085]



(4) (7) (8) (I-28)

(Step 1) 3-(3,4-Methylenedioxy benzyl)-4-phenylthio-N-(t-butyldimethyl silyl)-azetidine-2-one(7)

[0086] To a solution of 2.94 g of Compound (4) (10 mmol) in tetrahydrofuran (30 ml) was added 2.8 g of 3,4-methylenedioxybenzyl bromide (1.3 eq) and was added dropwise 8.8 ml of 2M LDA (1.76 eq) over 10 minutes at —76 °C. The mixture was stirred for 2 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 5.5 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 1.42 g of an oil material (7) (33 %).

NMR:H^1,$CDCl_3$(δ), 0.23(m,6H),0.91(m,9H)2.85-3.00(m,2H),3.42-3.50(m,1H), 4.57(d, J=2.2 Hz,1H),5.95(m,2H),6.50-7.50(m,8H)

(Step 2) 3-(3,4-Methylenedioxy benzyl)-4-phenylthio-azetidine-2-one(8)

[0087] To a solution of 1.32 g of Compound (7) (3.09 mmol) in tetrahydrofuran (7 ml) were added 0.22 ml of acetic acid (1.2 eq) and 3.7 ml of 1 M n-Bu_4NF/THF (1.2 eq). The mixture was stirred for 45 minutes at 25 °C, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.85 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 488 mg of a crystalline material (8) (50 %).

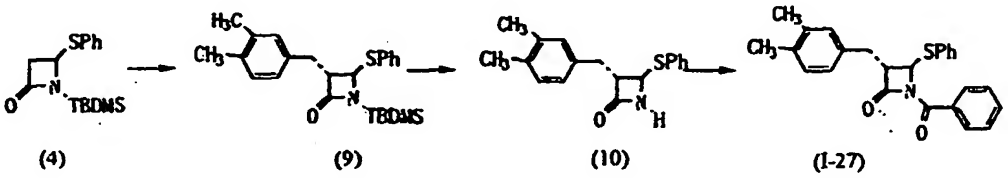
NMR:H^1,$CDCl_3$(δ),2.85-3.10(m,2H),3.28-3.38(m,1H),4.67(d,J=2.2Hz,1H),5.94 (m,2H),6.10(br,1H),6.70-7.40(m,8H)

(Step 3) Compound (I-28)

[0088] To a solution of 407 mg of Compound (8) (1.3 mmol) in dimethylformamide (4.0 ml) was added 0.18 ml of benzyl chloride (1.3 eq), followed by addition of 7.5 mg of 60% NaH (1.4 eq) at 5 °C. The mixture was stirred for 2 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.60 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 270 mg of an oil material (I-28) (49.7 %).

Example 6 Compound (I-27)

[0089]



(4) (9) (10) (I-27)

(Step 1) 3-(2,3-Dimethyl benzyl)-4-phenylthio-N-(t-butyldimethylsilyl)-azetidine-2-one(9)

[0090] To a solution of 2.94 g of Compound (4) (10 mmol) in tetrahydrofuran (30 ml) was added 4.57 g of 2,3-dimethylbenzyl iodide (1.3 eq) and was added dropwise 7.5 ml of 2M LDA (1.50 eq) over 10 minutes at —76 °C. The mixture was stirred for 0.5 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 7.8 g of an oil residue. The obtained residue was chromatographed on silica gel(n-hexane : ethyl acetate) to give 4.06 g of an oil material (9) (99 %).

(Step 2) 3-(3,4-Dimethyl-benzyl)-4-phenylthio-azetidine-2-one(10)

[0091] To a solution of 3.71 g of Compound (9) (9.0 mmol) in tetrahydrofuran (25 ml) were added 0.62 ml of acetic acid (1.2 eq) and 10.8 ml of 1 M n-Bu_4NF/THF (1.2 eq). The mixture was stirred for 30 minutes at 25 °C, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 3.30 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 1.99 g of a crystalline material (10), followed by recrystallization from n-hexane : ethyl acetate to give 1.07 g of Compound (10) (63 %). As a byproduct, 0.40 g of 3,3-Bis-(3,4-dimethylbenzyl)-4-phenylthio-azetidine-2-one(11) (10/7 %) was obtained by chromatography.

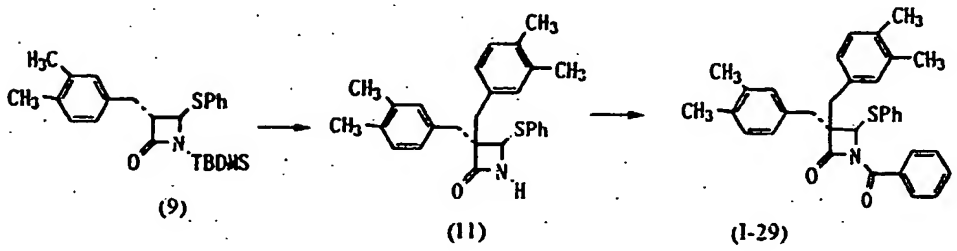
Compound (10) NMR:H^1,$CDCl_3$(δ),2.23.2.28(m,6H),2.90-3.25(m,2H),3.30-3.42(m, 1H), 4.67(d,J=2.2Hz,1H),6.20(br,1H),6.97-7.35(m,8H)
Compound (11) NMR:H^1,$CDCl_3$(δ),2.15-2.30(m,12H),2.60-3.50(m,4H),4.84,4.90 (s,1H),5.89(s,1H),6.82-7.40(m,11H)

(Step 3) Compound (I-27)

[0092] To a solution of 446 mg of Compound (10) (1.5 mmol) in dimethylformamide (4.0 ml) was added 0.21 ml of benzoyl chloride (1.3 eq), followed by addition of 81 mg of 60% NaH (1.4 eq) at 5 °C. The mixture was stirred for 1.5 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.65 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 350 mg of a crystalline material (I-27) (58.1 %).

Example 7 Compound (I-29)

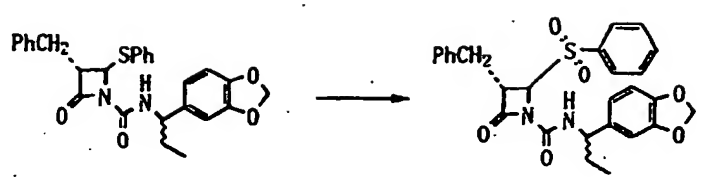
[0093]



[0094] To a solution of 350 mg of Compound (11) (0.84 mmol) obtained in Example 6 Step 2 in dimethylformamide (3.5 ml) was added 0.12 ml of benzyl chloride (1.2 eq), followed by addition of 49 mg of 60% NaH (1.4 eq) at 5 °C. The mixture was stirred for 1.5 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.45 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 240 mg of a crystalline material (I-29) (55 %).

Example 8 Compound (I-33)

[0095]

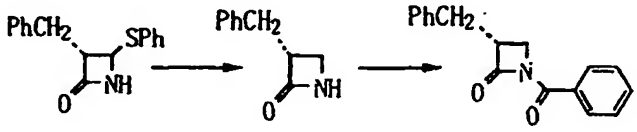


(I-21) (I-33)

[0096] To a solution of 0.30 g of Compound (I-21) (0.65 mmol) in methylene chloride (5.0 ml) was added 310 mg of m-chloroperbenzoic acid (2.0 eq) at 5 °C, followed by stirring for 2 hours at the same temperature and for 1 hour at 25 °C. The reaction mixture was poured into a dilute aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.35 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 290 mg of an oil material (I-33) (91 %).

Example 9 Compound (I-31)

[0097]



(6) (12) (I-31)

(Step 1) 3-Benzyl-azetidine-2-one(12)

[0098] To a solution of 3.77 g of Compound (6) (14 mmol) in benzene (15 ml) were added 7.53 ml of nBu_3SnH (2.0 eq) and 0.46 g of AIBN (2 eq). The mixture was stirred for 5.5 hours at 100 °C and 0.46 g of AIBN was added thereto in every 2 hours. After the solvent was removed under reduced pressure and a soluble material was removed by n-hexane, the residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 2.2 g of a crystalline residue. The obtained residue was recrystallized from n-hexane : ethyl acetate to give 2.10 g of Compound (12) (92%:mp. 86 to 87°C).

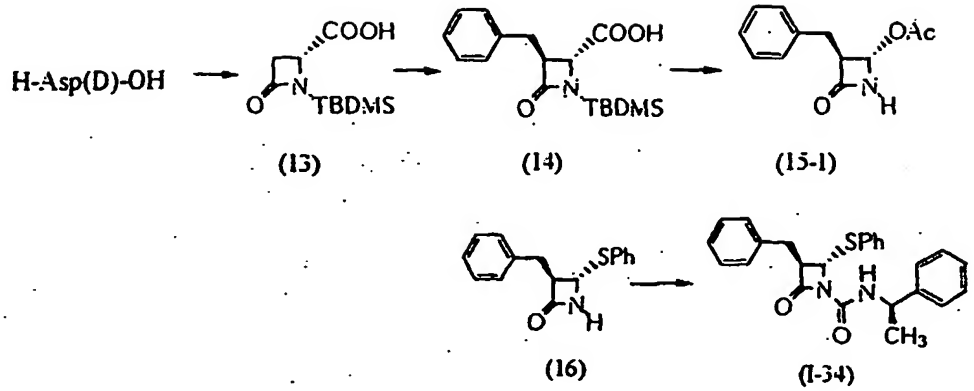
NMR:H^1,$CDCl_3$(δ),2.88-3.22(m,3H),3.38(t,J=5.4Hz,1H),3.50-3.60(m,1H),5.85 (br,1H),20-7.40(m,5H)
IR: ν;$CHCl_3$;3420,1753 cm^{-1}

(Step 2) Compound (I-31)

[0099] To a solution of 387 mg of Compound (12) (2.40 mmol) in dimethylformamide (4.0 ml) was added 0.34 ml of benzoyl chloride (1.2 eq), followed by addition of 0.12 g of 60 % NaH (1.2 eq) at 5 °C. The mixture was stirred for 1.0 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.65 g of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 505 mg of an oil material (I-31) (83.7 %).

Example 10 Compound (I-34)

[0100]



(Step 1) (4R)-Carboxyl-N-(t-butyldimethylsilyl)-azetidine-2-one(13)

[0101] The title compound was synthesized from (D)-aspartic acid according to the method described in Tetrahedron Vol.46 No.13/14 PP.4733-4748 1990, J. E. Boldwin et al.

(Step 2) (3S)-Benzyl-(4R)-carboxyl-N-(t-butyldimethylsilyl)-azetidine-2-one(14)

[0102] To a solution of 12.84 g of Compound (13) (56 mmol) in tetrahydrofuran (64 ml) was added dropwise 58.8 ml of 2 M LDA (2.15 eq) over 15 minutes at —55 to —40 °C. The mixture was stirred for 20 minutes at the same temperature and 14.65 ml of benzyl bromide (2.2 eq) was added thereto at —55 to —40 °C. The mixture was stirred for 1.5 hours at —40 to —15 °C, poured into an aqueous solution of M-$NaHSO_4$ and extracted with ethyl acetate. The objective material was extracted with an aqueous solution of sodium bicarbonate and ethyl acetate at pH 3.0 successively. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 17.45 g of a crystalline residue (14) (98 %).

NMR:H^1,$CDCl_3$(δ),0.21(s,6H),0.78(s,9H),2.95-3.20(m,2H),3.60-3.70(m,1H), 3.77(d,J=2.8Hz,1H),7.20-7.40(m,5H),7.80(br,1H)

(Step 3) (3S)-Benzyl-4-acetoxy-azetidine-2-one(15)

[0103] To a solution of 17.25 g of Compound (14) (54 mmol) in dimethylformamide (50 ml) was added 10 ml of acetic acid and was added 25.2 g of $Pb(OAc)_4$ (1.0 eq) at 25 °C. The mixture was stirred for 40 minutes at 50 to 55 °C and 43 ml of 1M n-Bu_4NF/THF (0.8eq) was added to the mixture at 20 to 25 °C. The mixture was stirred for 1 hour at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with diluted aqueous solution of sodium bicarbonate and water successively, dried and filtered, and the solvent was removed to give 11.44 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 6.24 g of an oil material. i.e., (3S)-benzyl-(4S)-acetoxy-azetidine-2-one

(15-1) (53 %), 0.65 g of (3S)-benzyl-(4R)-acetoxy-azetidine-2-one (15-2) (6%) and 1.07 g of mixture thereof (9 %).
(15-1) NMR:H^1,$CDCl_3$(δ),2.07(s,3H),2.96-3.19(m,2H),3.47-3.54(m,1H),5.15 (d,J=1.0Hz,1H),6.49(br,1H),7.20-7.40(m,5H)
(15-2) NMR:H^1,$CDCl_3$(δ),2.12(s,3H),3.08-3.15(m,2H),3.63-3.77(m, 1H), 5.89(d,J=4.3Hz,1H), 6.61(br,1H),7.20-7.40(m,5H)

(Step 4) (3S)-Benzyl-(4S)-phenylthio-azetidine-2-one(16)

[0104] To a solution of 0.61 ml of thiophenol (1.3 eq) in acetone (6 ml) was added dropwise 5 ml of N-NaOH (1.2 eq) at 5 to 10 °C, and the mixture was stirred for 10 minutes at the same temperature. To the mixture was added dropwise a solution of 1.0 g of Compound (15-1) (4.56 mmol) in acetone (7 ml) at the same temperature. The mixture was stirred for 3 hours at 10 to 15 °C, poured into ice-cooled water and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 1.35 g of a crystalline residue. The obtained residue was recrystallized from n-hexane : ethyl acetate to give 1.13 g of Compound (16) (92 %).

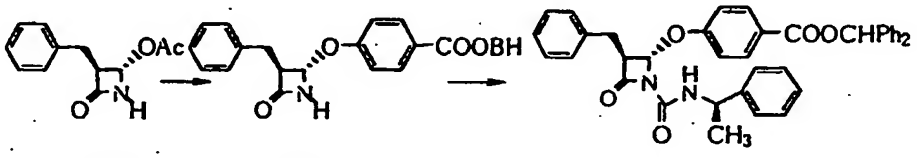
NMR:H^1,$CDCl_3$(δ),2.95-3.19(m,2H),3.34-3.45(m,1H) 4.68(d,J=2.2Hz,1H), 6.14 (br,1H), 7.18-7.35(m,10H)

(Step 5) Compound (I-34)

[0105] To a solution of 162 mg of Compound (16) (0.6 mmol) in methylene chloride (2.0 ml) were added 0.17 ml of R-(+)-Phenyl-ethyl-isocyanate (2.0eq), 0.18 ml of triethylamine (2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.37 g of a crystalline residue. The residue was chromatographed on silica gel (n-hexane : ethyl acetate) to give 145 mg of a crystalline material (I-34) (58 %).

Example 11 Compound (I-48)

[0106]



(15-1) (17-1) (I-48)

(Step 1) (3S)-Benzyl-(4S)-(4-benzhydrylcarboxyphenyl)oxy-azetidine-2-one(17-1)

[0107] To a solution of 2.07 g of benzhydryl-4-hydroxy benzoate (1.3 eq) in acetone (8 ml) was added dropwise 6 ml of N-NaOH (1.2 eq) at 5 to 10 °C. At the same temperature, the mixture was stirred for 10 minutes and a solution of 1.1 g of Compound (15-1) (5.0 mmol) in acetone (6 ml) was added dropwise to the mixture. The mixture was stirred for 3 hours at 10 to 15 °C, poured into ice-cooled water and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 2.75 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 1.87 g of Compound (17-1) (80 %).

[0108] From another fraction, 0.14 g of a crystalline material, i.e., (3S)-benzyl-(4R)-(4-benzhydrylcarboxyphenyl)oxy-azetidine-2-one(17-2), was obtained (6%).

(17-1) NMR:H^1,$CDCl_3$(δ),3.02-3.28(m,2H),3.59-3.66(m,1H),5.40(s,1H),(br,1H), 7.08(s,1H),7.15-7.48(m,15H) 7.36,7.96 (ABq,J=8.0 Hz, 4H).

(17-2) NMR:H^1,$CDCl_3$(δ),3.19 (d,J=7.6Hz,2H),3.73-3.84(m,1H),5.75(d, J= 4.2Hz,1H),6.70(br,1H),6.86,8.08(ABq,J=8.0Hz,2H),7.09(s,1H),7.15-7.48(m,15H)

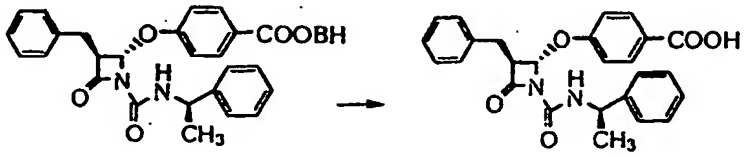
(Step 2) Compound (I-48)

[0109] To a solution of 1.85 g of Compound (17-1) (4.0 mmol) in methylene chloride (18.0 ml) were added 1.13 ml of R-(+)-Phenyl-ethyl-isocyanate (2.0eq), 1.12 ml of triethylamine (2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered and the solvent was removed to give 3.0 g of a crystalline residue. The

obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 2.02 g of a crystalline material (I-48) (83 %).

Example 12 Compound (I-37)

[0110]

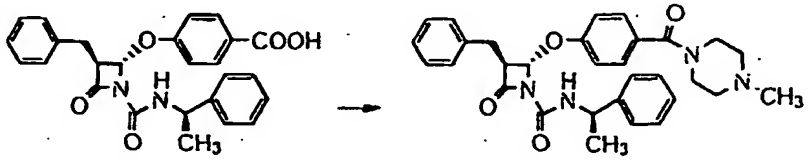


(I-48) (I-37)

[0111] To a solution of 1.88 g of Compound (I-48) (3.08 mmol) in anisole (9.4 ml) was added 2.43 ml of CF_3COOH (10 eq) at 5 °C. The mixture was stirred for 3.5 hours at the same temperature, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 10 g of an oil residue. The obtained residue was recrystallized from n-hexane to give 1.23 g of a crystalline material (I-37) (90 %).

Example 13 Compound (I-39)

[0112]

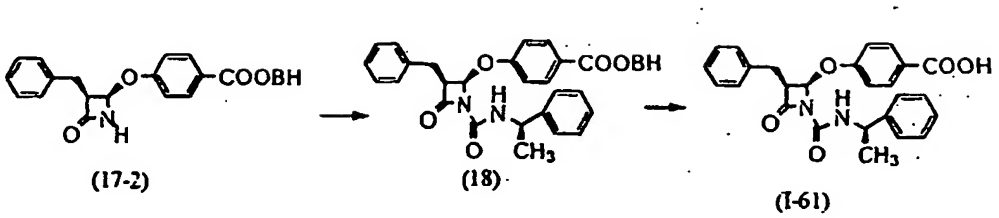


(I-37) (I-39)

[0113] To a solution of 120 mg of Compound (I-37) (0.27 mmol) in methylene chloride (1.2 ml) were added 36 µl of 1-methyl-piperazine (1.2eq) and 62 mg of WSCD (1.2 eq). The mixture was stirred for 5 hours at 25 °C, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 143 mg of an oil residue. The obtained residue was recrystallized from n-hexane to give 130 mg of a powder material (I-39) (92 %).

Example 14 Compound (I-61)

[0114]



(17-2) (18) (I-61)

(Step 1) Compound (18)

[0115] To a solution of 463 mg of Compound (17-2) (1.0 mmol) in methylene chloride (4.0 ml) were added 0.28 ml of R-(+)-phenyl-ethyl-isocyanate (2.0eq), 0.28 ml of triethylamine (2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 0.55 g of a crystalline residue, The residue was chromatographed on silica gel (toluene : ethyl acetate) to give 0.50 g of a crystalline material (18) (82 %).

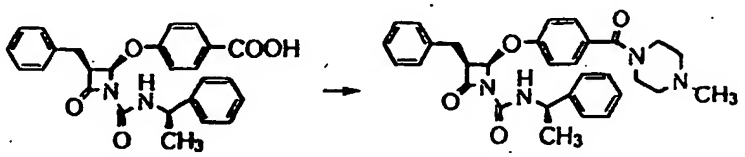
NMR:H^1,$CDCl_3$(δ),1.54(d,J=4.6Hz,3H),3.18-3.24(m,2H),3.82-3.94(m,1H), 4.96-5.12(m,1H),6.12(d,J=4.6Hz,1H),6.85(d,J=8.3Hz,1H),7.08-8.09(m,25H)

(Step 2) Compound (I-61)

[0116] To a solution of 0.41 g of Compound (18) (0.67 mmol) in anisole (2.1 ml) was added 0.52 ml of CF_3COOH (10 eq) at 5 °C. The mixture was stirred for 5 hours at the same temperature, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 3 g of an oil residue. The obtained residue was recrystallized from n-hexane : ether to give 270 mg of a crystalline material (I-61) (90 %).

Example 15 Compound (I-62)

[0117]

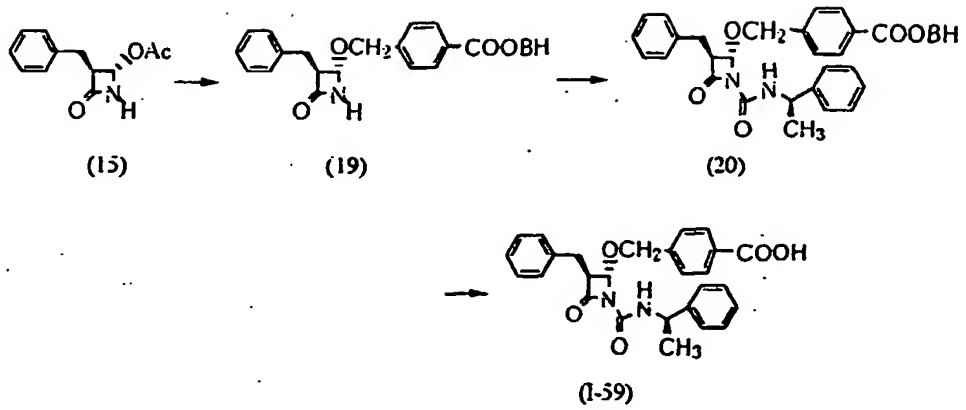


(I-61) (I-62)

[0118] To a solution of 100 mg of Compound (I-61) (0.23 mmol) in methylene chloride (1.2 ml) were added 30 µl of 1-methyl-piperazine (1.2 eq) and 56 mg of WSCD (1.2 eq) at 5 °C. The mixture was stirred for 2.5 hours at 25 °C, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 120 mg of an oil residue. The obtained residue was recrystallized from n-hexane to give 111 mg of a powder material (I-62) (94 %).

Example 16 Compound (I-59)

[0119]



(Step 1) Compound (19)

[0120] To a solution of 0.8 g of benzhydryl-4-hydroxy phenylacetate (1.0 eq) in tetrahydrofuran (2 ml) was added dropwise 1.25 ml of 2M t-BuMgCl/Et_2O (1.0eq) at 5 °C. At the same temperature, the mixture was stirred for 1.5 minutes and a solution of 0.55 g of Compound (15) (2.5 mmol) in tetrahydrofuran (3 ml) was added dropwise to the mixture. The mixture was stirred for 3 hours at 20 to 25 °C, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 1.40 g of an oil residue. The obtained residue was chromatographeci on silica gel (toluene : ethyl acetate) to give 0.69 g of Compound (19) (58 %).

NMR:H^1,$CDCl_3$(δ),2.79-3.17(m,2H),3.37-3.48(m,1H),4.39(s,2H) 4.84(d,J=1.0Hz,1H),6.26(br,1H), 7.11(s,1H), 7.23-8.10(m,19H)

(Step 2) Compound (20)

[0121] To a solution of 0.66 g of Compound (19) (1.38 mmol) in methylene chloride (6.6 ml) were added 0.39 ml of R-(+)-phenyl-ethyl-isocyanate (2.0eq), 0.39 ml of triethylamine (2.0 eq) and catalytic amounts of DMAP. The mixture was stirred at 25 °C for 16 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate, The organic layer was washed with water, dried and filtered, and the solvent was removed to give 1.0 g of a crystalline residue. The residue was chromatographed on silica gel (toluene : ethyl acetate) to give 0.61 g of a crystalline material (20) (70 %).

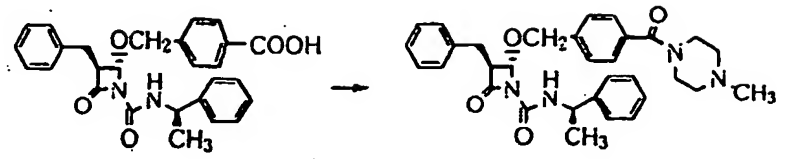
NMR:H^1,$CDCl_3$(δ),1.55(s,3H),2.79-3.16(m,2H),3.46-3.54(m,1H),4.81, 4.96 (ABq,J=14Hz,2H), 4.93-5.10(m,1H)5.12(d,J=1.7Hz,1H), 6.93(d,J=8.0Hz,1H), 7.05-8.10(m,25H)

(Step 3) Compound (I-59)

[0122] To a solution of 0.55 g of Compound (20) (0.88 mmol) in anisole (2.0 ml) and methylene chloride (2.8 ml) was added 0.68 ml of CF_3COOH (10 eq) at 5 °C. The mixture was stirred for 5 hours at the same temperature, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 3 g of an oil residue. The obtained residue was recrystallized from n-hexane : isopropyl ether to give 0.37 g of a crystalline material. The obtained material was chromatographed on silica gel (n-hexane : ethyl acetate) to give an oil residue and the residue was recrystallized from n-hexane to give 220 mg of a powder material (I-59) (54 %).

Example 17 Compound (I-60)

[0123]

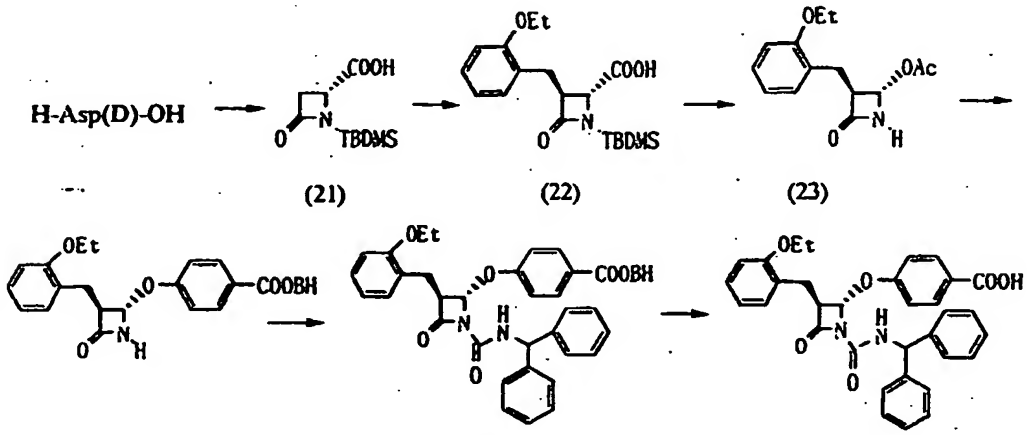


(I-59) (I-60)

[0124] To a solution of 100 mg of Compound (I-59) (0.22 mmol) in methylene chloride (1.2 ml) were added 30 µl of 1-methyl-piperazine (1.2eq) and 55 mg of WSCD (1.2 eq). The mixture was stirred for 2.5 hours at 25 °C, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 120 mg of an oil residue. The obtained residue was chromatographed on silica gel (n-hexane : ethyl acetate : methanol) to give an oil residue and recrystallized from n-hexane to give 67 mg of a powder material (I-60) (50 %).

Example 18 Compound (I-144)

[0125]



(21) (22) (23)

(24) (25) (I-144)

(Step 1) (4R)-Carboxyl-N-(t-butyldimethylsilyl)-azetidine-2-one(21)

[0126] Compound (21) was synthesized from (D)-aspartic acid according to the method described in Tetrahedron Vol. 46 Nos. 13/14 PP. 4733-4748 1990, J. E. Boldwin et al.

(Step 2) (3S)-2-Ethoxybenzyl-(4R)-carboxyl-N-(t-butyldimethylsilyl)-azetidine-2-one(22)

[0127] To a solution of 77 ml of 0.68 M LDA (2.1 eq) in THF was added dropwise a solution of 5.73 g of Compound (21) (25 mmol) in tetrahydrofuran (30 ml) at —45 °C to —25 °C over 15 minutes. The mixture was stirred for 2.5 hours at the same temperature and 10.75 g of 2-ethoxybenzylbromide (2.0 eq) was added to the mixture at —38 °C to —28 °C. The mixture was stirred for 2 hours at —28 °C to —15 °C, poured in a solution of N-hydrochloric acid and extract

with ethyl acetate. The objective material was extracted with aqueous solution of sodium bicarbonate and with ethyl acetate at pH 3.0 successively. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 7.82 g of a crystalline residue (22) (86 %).

NMR:H^1,$CDCl_3$(δ),0.22(s,6H),0.80(s,9H),1.41(t,3H,J=7.0Hz),2.90-3.30(m,2H), 3.50-3.70(m,1H),3.87(d,J=3.4Hz,1H),4.02(q,2H,J=7.0Hz),6.70-7.340(m,5H)

(Step 3) (3S)-2-Ethoxybenzyl-4-acetoxy-azetidine-2-one(23)

[0128] To the mixture of 7.82 g of Compound (22) (21.5 mmol) in dimethylformamide (23.5 ml) was added 4.7 ml of acetic acid and was added 9.53 g of $Pb(OAc)_4$ (1.0 eq) at 25 °C. The mixture was stirred for 100 minutes at 50 °C to 55 °C and 16 ml of 1M n-Bu_4NF/THF (0.75 eq) was added to the mixture at 20 °C to 25 °C. The mixture was stirred for 2 hours at the same temperature, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with diluted aqueous solution of sodium bicarbonate and water successively, dried and filtered, and the solvent was removed to give 5.75 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 2.43 g of an oil material, i.e., (3S)-2-ethoxybenzyl-(4S)-acetoxy-azetidine-2-one (23-1) (43 %), and 1.79 g of mixture of (23-1) and (3S)-ethoxybenzyl-(4R)-acetoxy-azetidine-2-one (23-2) (32 %).

(23-1)NMR:H^1,$CDCl_3$(δ),1.40(t,J=7.0Hz,3H),2.05(s,3H), 2.89-3.22(m,2H), 3.48-3.68 (m, 1H), 4.05 (q,J=7.0Hz,2H),5.61(d,J=1.2Hz,1H),6.42(br,1H),6.83-7.26(m,4H)

(Step 4) (3S)-2-Ethoxybenzyl-(4S)-(4-benzhydrylcarboxyphenyl)oxy-azetidine-2-one(24)

[0129] To a solution of 5.69 g of benzhydryl-4-hydroxy benzoate (1.2 eq) in acetone (36 ml) was added dropwise 17 ml of N-NaOH (1.1 eq) at 5 °C to 10 °C. At the same temperature, the mixture was stirred for 10 minutes and a solution of 4.1 g of Compound (23-1,2) (15.6 mmol) in acetone (16 ml) was added dropwise to the mixture. The mixture was stirred for 1.5 hours at 10 °C to 15 °C, poured into ice-cooled water and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 9.41 g of an oil residue. The obtained residue was chromatographed on silica gel (toluene : ethyl acetate) to give 4.82 g of a crystalline material (24-1) (61 %). From other fraction, 2.00 g of a crystalline material, i.e., (3S)-Ethoxybenzyl-(4R)-(4-benzhydrylcarboxyphenyl)oxy-azetidine-2-one was obtained (25 %).

(24-1)NMR:H^1,$CDCl_3$(δ),1.35(t,J=7.0Hz,3H),2.95-3.34(m,2H),3.58-3.65(m, 1H), 4.00 (q,J=7.0Hz,2H),5.49(d,J=0.9Hz,1H),6.43(br,1H),6.71-8.02(m,19H)

(Step 5) Compound (25)

[0130] To a solution of 1.04 g of diphenylacetic acid (2.5 eq) in methylene chloride (10 ml) were added 0.69 ml of triethylamine (2.5eq) and 1.06 ml of diphenylphosphoryl amide (2.5 eq). The mixture was stirred for 3 hours at 25 °C and a solution of 1.00 g of Compound (24-1) (2.0 mmol) in methylene chloride (18.0 ml), 0.69 ml of triethylamine (2.5 eq) and catalytic amounts of DMAP were added to the mixture. The mixture was stirred at 25 °C for 24 hours, poured into diluted hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 3.0 g of a residue. The residue was chromatographed on silica gel (toluene : ethyl acetate) to give 1.29 g of Compound (25) (91 %).

(25)NMR:H^1,$CDCl_3$(δ),1.28(t,J=7.2Hz,3H),2.94-3.34(m,2H),3.66-3.74(m, 1H), 3.94(q,J=7.2Hz,2H),5.83(d,J=1.3Hz,1H),6.14(br,1H),6.79-8.00(m,30H)

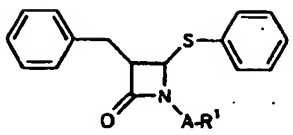
(Step 6) Compound (I-144)

[0131] To a solution of 1.18 g of Compound (25) (1.64 mmol) in methylene chloride (6 ml) was added 1.27 ml of anisole and was added 1.27 ml of CF_3COOH (10 eq) at 25 °C. The mixture was stirred for 3.5 hours at the same temperature, poured into diluted aqueous solution of sodium bicarbonate and extracted with methylene chloride. The organic layer was washed with water, dried and filtered, and the solvent was removed to give 10 g of an oil residue. The obtained residue was recrystallized from n-hexane to give 0.84 g of a crystalline material (93 %). The obtained material was chromatographed on silica gel (n-hexane : ethyl acetate) to give a crystalline residue and the residue was recrystallized to give 825 mg of Compound (I-144) (91 %).

[0132] Other compounds are synthesized by the similar methods. The structures of compounds and physical prop-

erties are shown below.

Table 1



(I-A)

3,4-trans racemate

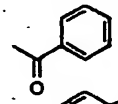
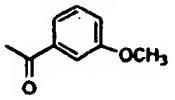
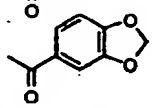
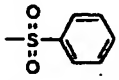
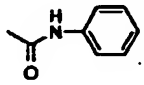
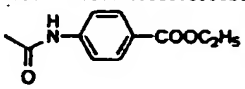
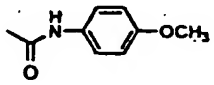
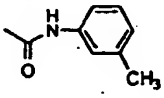
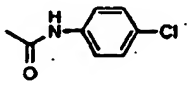
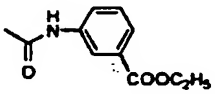
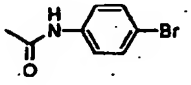
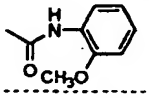
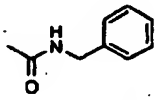
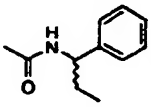
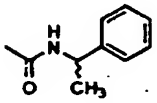
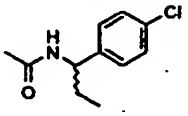
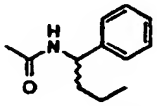
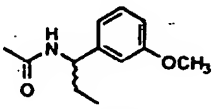
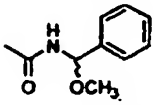
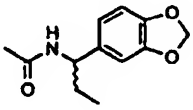
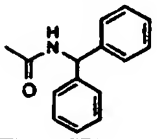
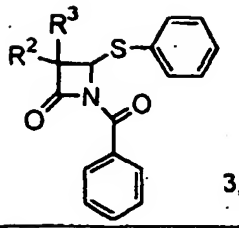
No.	-A-R^1	No.	-A-R^1
I-1		I-3	
I-2		I-4	
I-5		I-9	
I-6		I-10	
I-7		I-11	
I-8		I-12	
I-13		I-18	
I-14		I-19	
I-15		I-20	
I-16		I-21	
I-17			

Table 2



(I-B)

3,4-trans racemate

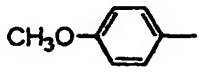
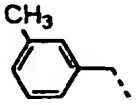
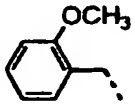
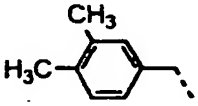
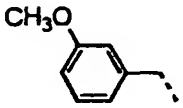
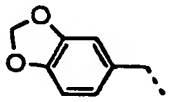
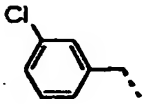
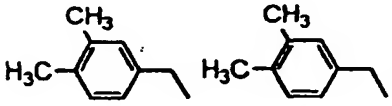
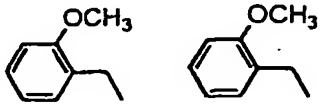
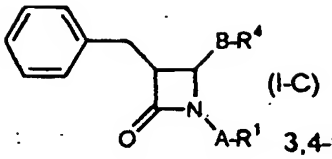
No.	R^2	R^3	No.	R_2	R^3
I-22		H	I-26		H
I-23		H	I-27		H
I-24		H	I-28		H
I-25		H			
I-29			I-30		

Table 3



3,4-trans racemate

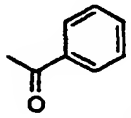
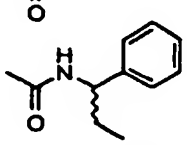
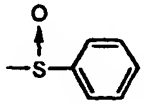
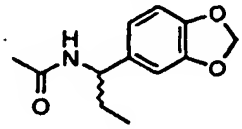
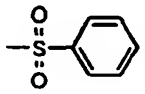
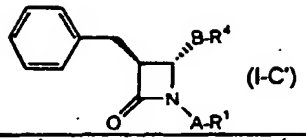
No.	A-R^1	B-R^4
I-31		-H
I-32		
I-33		

Table 4



(I-C')

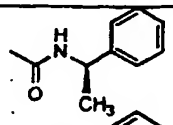
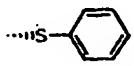
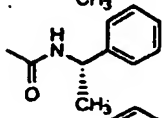
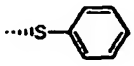
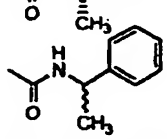
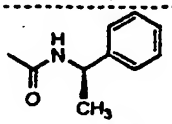
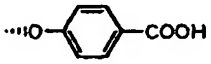
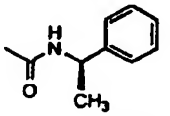
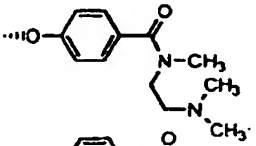
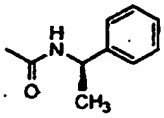
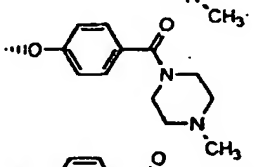
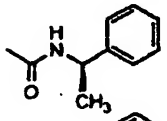
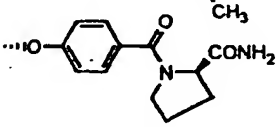
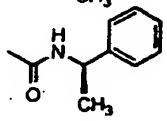
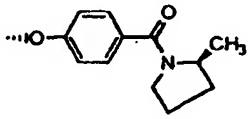
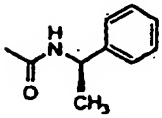
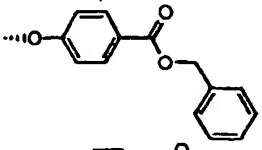
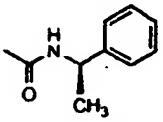
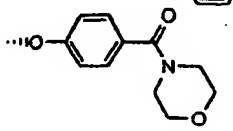
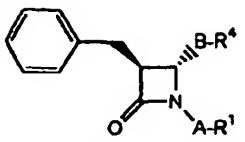
No.	A-R^1	B-R^4
I-34		
I-35		
I-36		
I-37		
I-38		
I-39		
I-40		
I-41		
I-42		
I-43		

Table 5



(I-C')

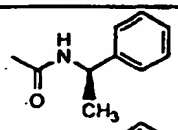
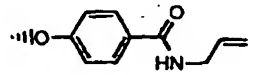
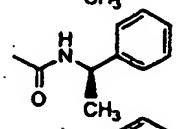
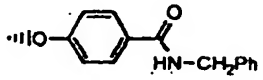
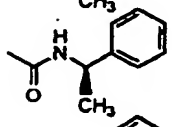
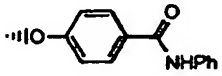
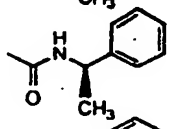
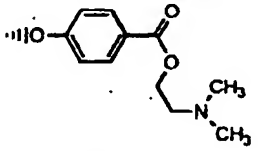
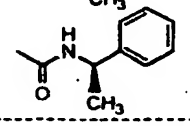
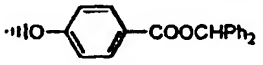
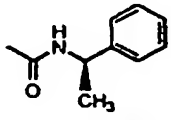
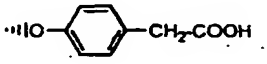
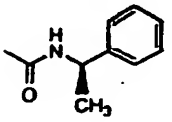
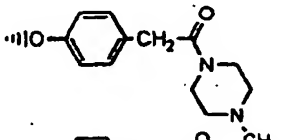
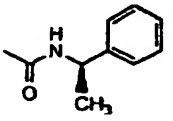
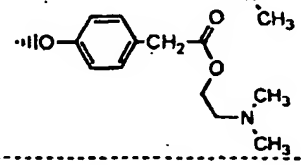
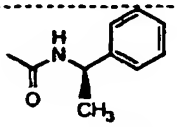
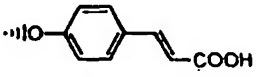
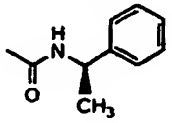
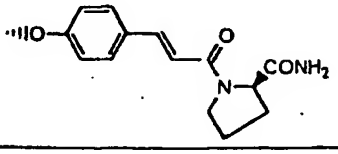
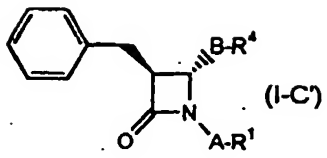
No.	A-R^1	B-R^4
I-44		
I-45		
I-46		
I-47		
I-48		
I-49		
I-50		
I-51		
I-52		
I-53		

Table 6



(I-C')

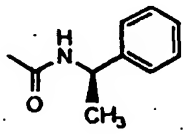
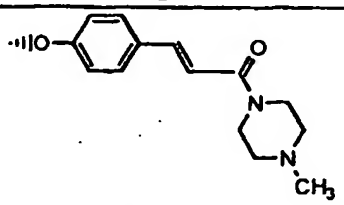
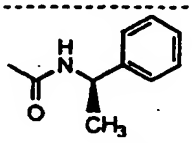
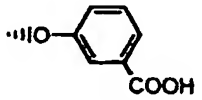
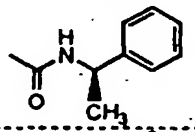
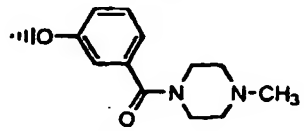
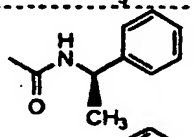
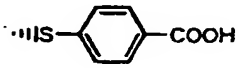
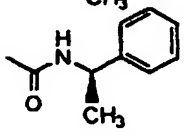
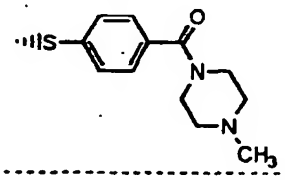
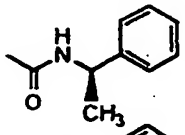
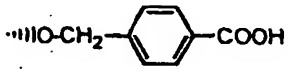
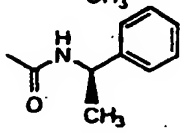
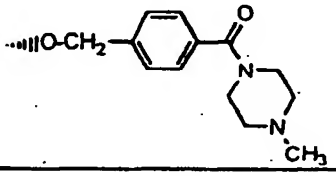
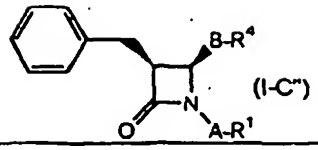
No.	A-R^1	B-R^4
I-54		
I-55		
I-56		
I-57		
I-58		
I-59		
I-60		

Table 7



(I-C")

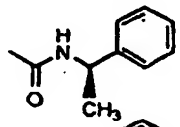
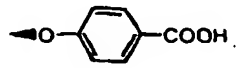
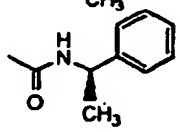
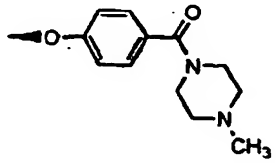
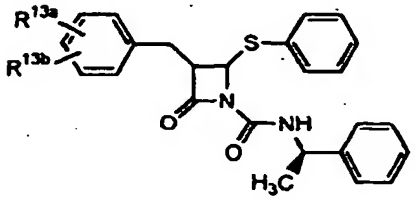
No.	A-R^1	B-R^4
I-61		
I-62		

Table 8



(I-D)

3,4-racemate

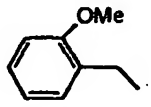
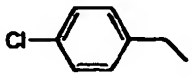
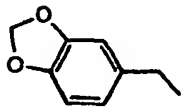
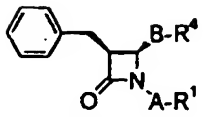
No.	
I-63	
I-64	
I-65	

Table 9



(I-C'')

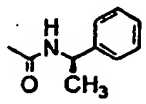
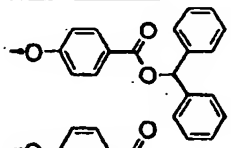
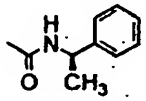
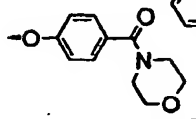
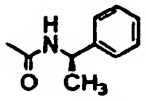
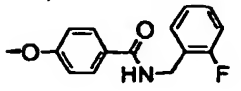
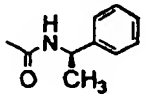
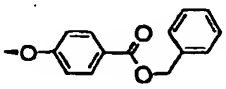
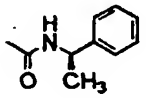
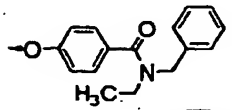
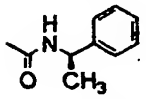
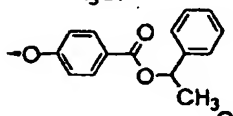
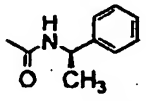
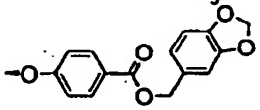
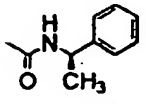
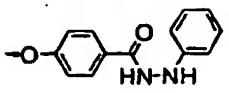
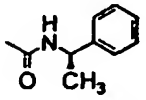
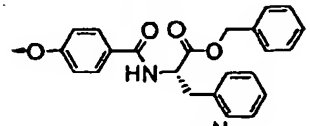
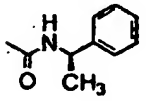
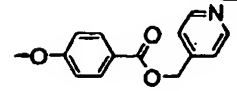
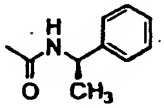
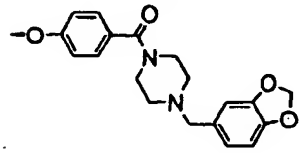
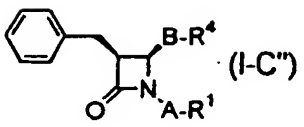
No.	A-R^1	B-R^4
I-66		
I-67		
I-68		
I-69		
I-70		
I-71		
I-72		
I-73		
I-74		
I-75		
I-76		

Table 10



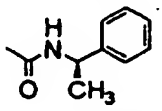
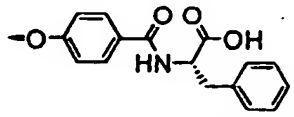
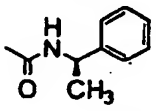
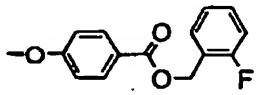
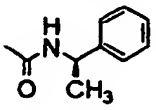
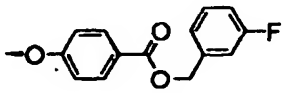
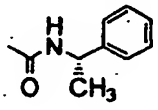
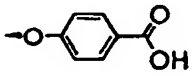
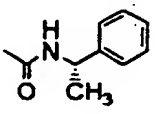
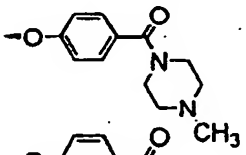
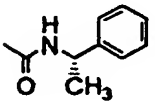
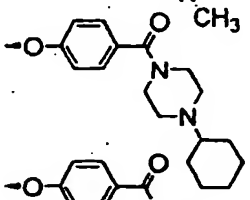
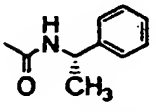
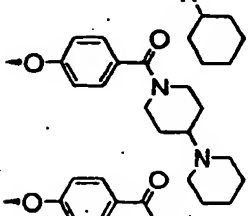
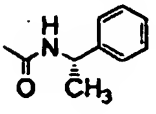
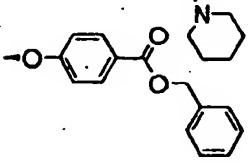
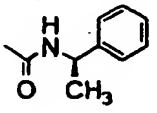
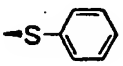
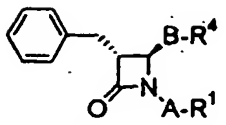
No.	A-R¹	B-R⁴
I-77		
I-78		
I-79		
I-80		
I-81		
I-82		
I-83		
I-84		
I-85		

Table 11



(I-C‴)

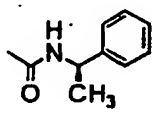
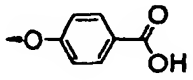
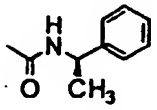
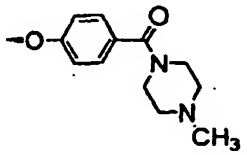
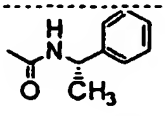
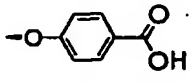
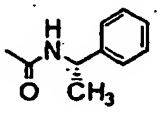
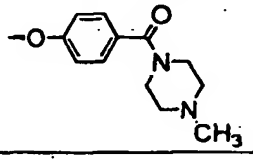
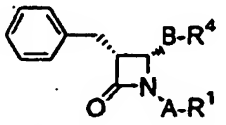
No.	A-R¹	B-R⁴
I-86		
I-87		
I-88		
I-89		

Table 12



(I-C⁗)

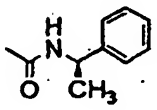
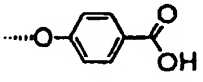
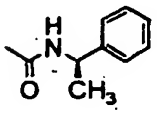
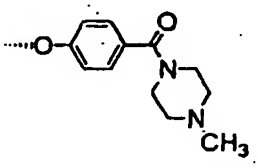
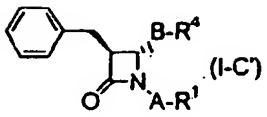
No.	A-R¹	B-R⁴
I-90		
I-91		

Table 13



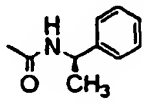
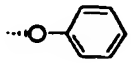
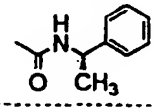
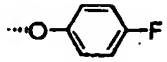
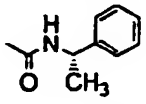
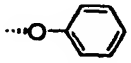
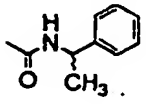
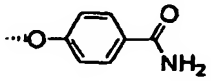
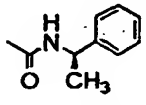
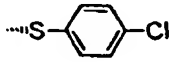
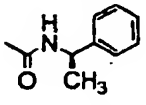
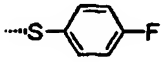
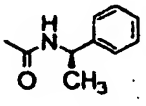
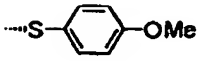
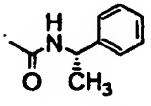
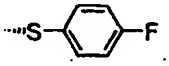
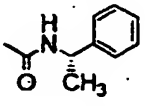
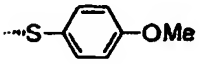
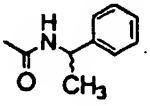
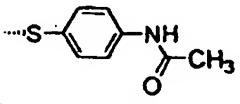
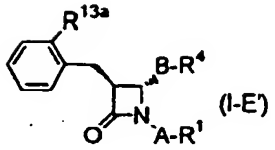
No.	A-R¹	B-R⁴
I-92		
I-93		
I-94		
I-95		
I-96		
I-97		
I-98		
I-99		
I-100		
I-101		

Table 14



(I-E')

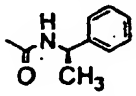
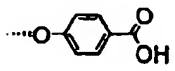
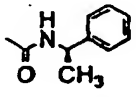
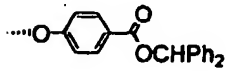
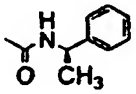
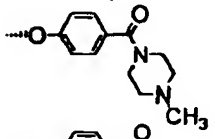
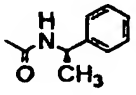
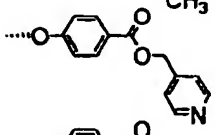
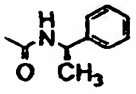
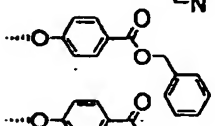
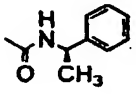
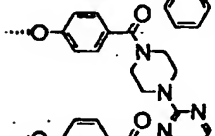
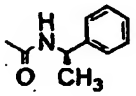
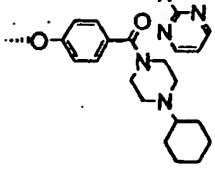
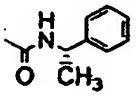
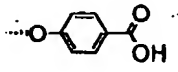
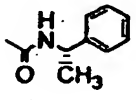
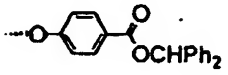
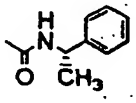
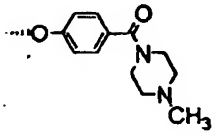
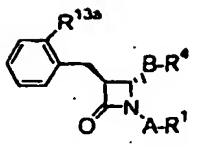
No.	A-R^1	B-R^4	R^{13a}
I-102			-OMe
I-103			-OMe
I-104			-OMe
I-105			-OMe
I-106			-OMe
I-107			-OMe
I-108			-OMe
I-109			-OMe
I-110			-OMe
I-111			-OMe

Table 15



(I-E')

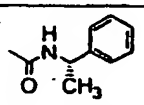
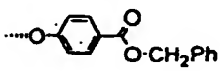
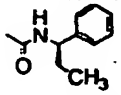
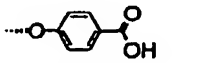
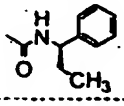
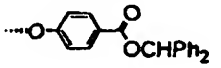
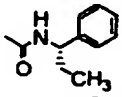
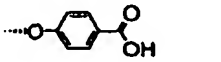
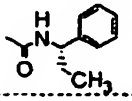
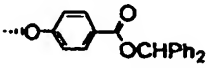
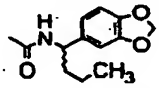
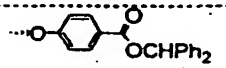
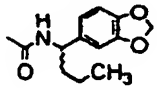
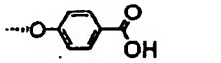
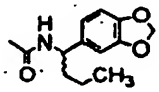
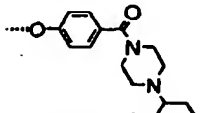
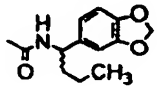
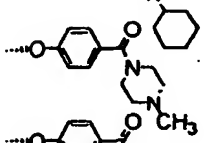
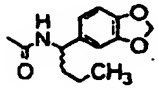
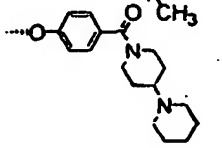
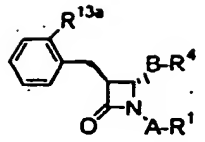
No.	A-R¹	B-R⁴	R¹³ᵃ
I-112			OMe
I-113			OMe
I-114			OMe
I-115			OMe
I-116			OMe
I-117			OMe
I-118			OMe
I-119			OMe
I-120			OMe
I-121			OMe

Table 16



(I-E')

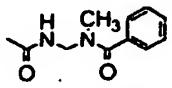
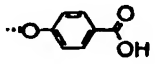
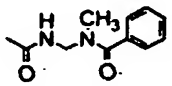
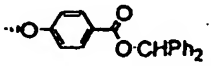
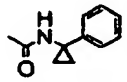
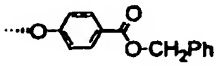
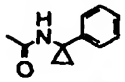
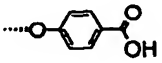
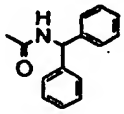
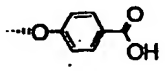
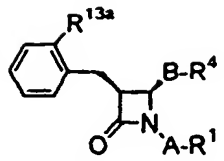
No.	A-R^1	B-R^4	R^{13a}
I-122			OEt
I-123			OEt
I-124			OMe
I-125			OMe
I-126			OMe

Table 17



(I-E")

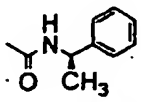
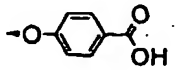
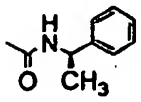
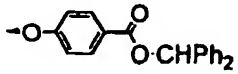
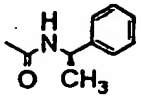
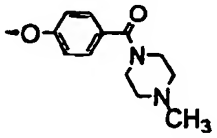
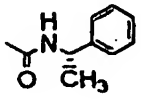
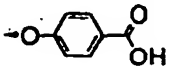
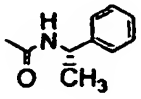
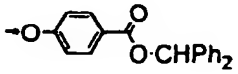
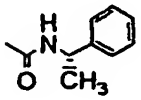
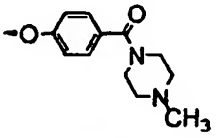
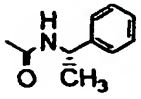
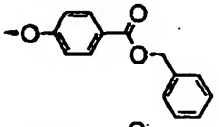
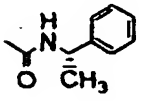
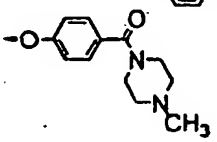
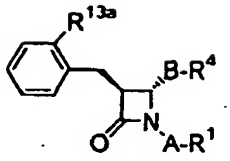
No.	A-R^1	B-R^4	R^{13a}
I-127			OMe
I-128			OMe
I-129			OMe
I-130			OMe
I-131			OMe
I-132			OMe
I-133			OMe
I-134 (HCl salt)			OMe

Table 18



(I-E')

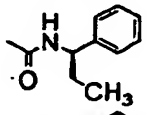
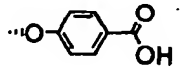
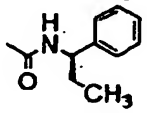
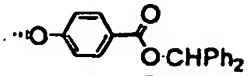
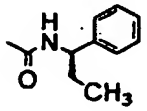
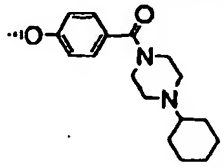
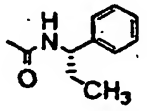
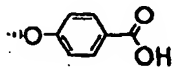
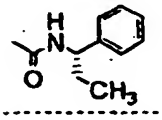
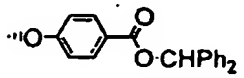
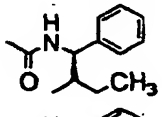
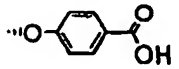
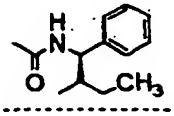
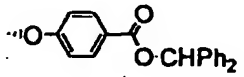
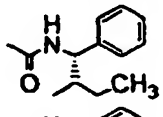
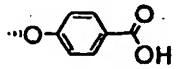
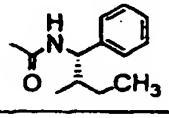
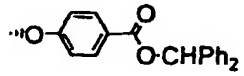
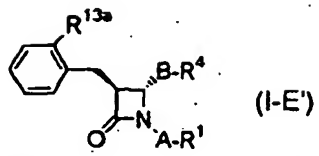
No.	A-R^1	B-R^4	R^{13a}
I-135			OEt
I-136			OEt
I-137 (HCl salt)			OEt
I-138			OEt
I-139			OEt
I-140			OEt
I-141			OEt
I-142			OEt
I-143			OEt

Table 19



(I-E')

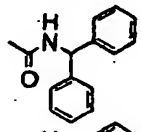
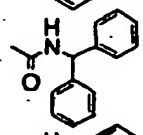
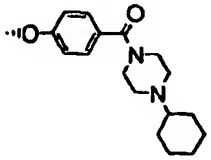
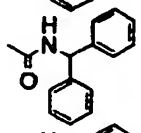
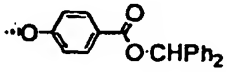
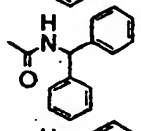
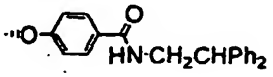
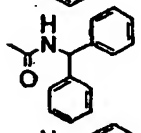
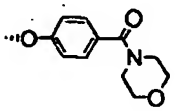
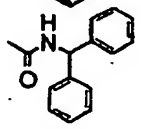
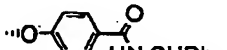
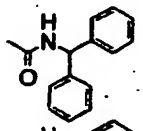
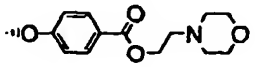
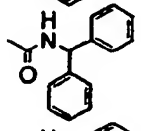
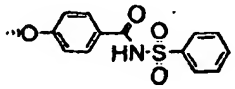
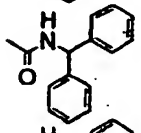
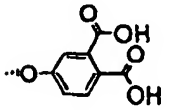
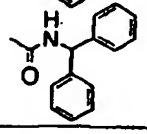
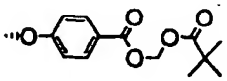
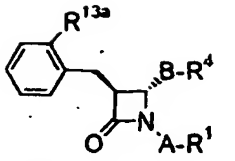
No.	A-R^1	B-R^4	R^{13a}
I-144			OEt
I-145 (HCl salt)			OEt
I-146			OEt
I-147			OEt
I-148			OEt
I-149			OEt
I-150			OEt
I-151			OEt
I-152			OEt
I-153			OEt

Table 20



(I-E')

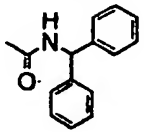
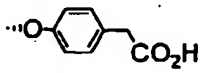
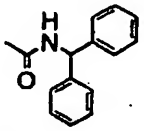
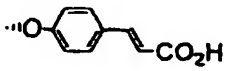
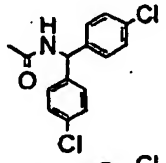
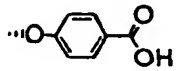
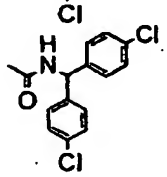
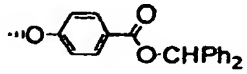
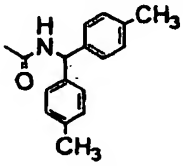
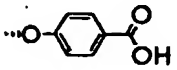
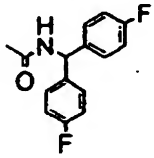
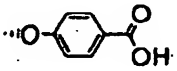
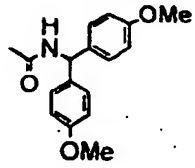
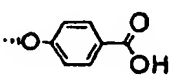
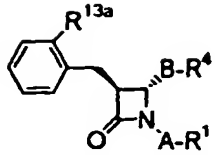
No.	A-R^1	B-R^4	R^{13a}
I-154			OEt
I-155			OEt
I-156			OEt
I-157			OEt
I-158			OEt
I-159			OEt
I-160			OEt

Table 21



(I-E')

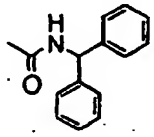
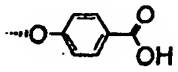
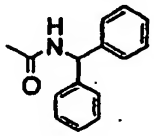
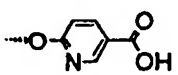
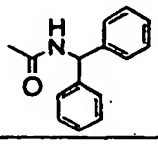
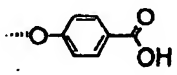
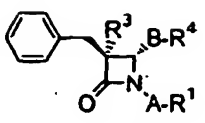
No.	A-R^1	B-R^4	R^{13a}
I-161			n-Pr
I-162			n-Pr
I-163			i-Pr

Table 22



(I-F')

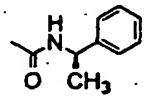
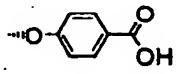
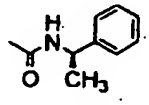
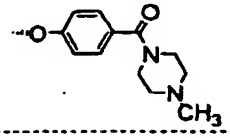
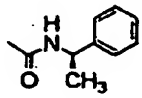
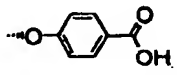
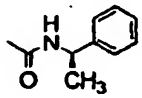
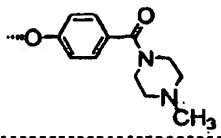
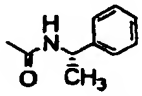
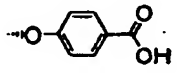
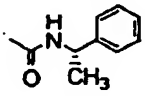
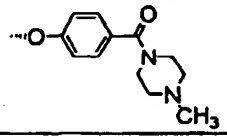
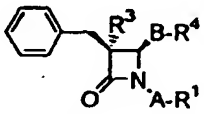
No.	A-R^1	R^3	B-R^4
I-164		Me	
I-165		Me	
I-166		Et	
I-167		Et	
I-168		Et	
I-169		Et	

Table 23



(I-F'')

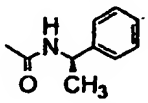
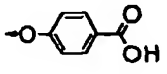
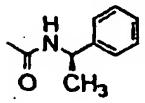
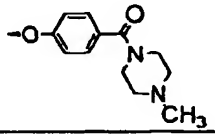
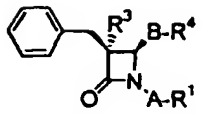
No.	A-R^1	R^3	B-R^4
I-170		Me	
I-171		Me	

Table 24



(I-F')

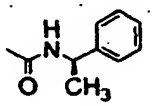
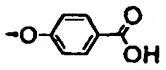
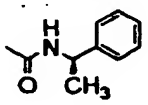
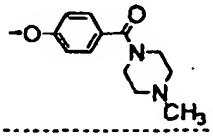
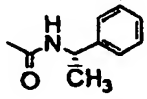
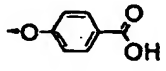
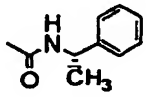
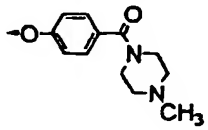
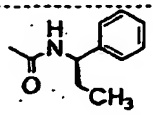
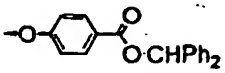
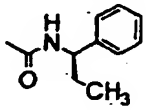
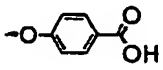
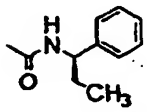
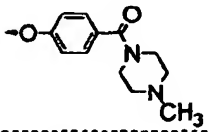
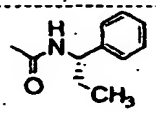
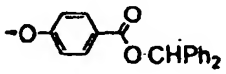
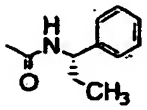
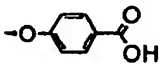
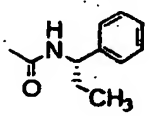
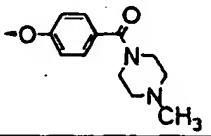
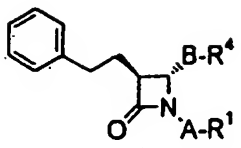
No.	A-R^1	R^3	B-R^4
I-172		Et	
I-173		Et	
I-174		Et	
I-175		Et	
I-176		Et	
I-177		Et	
I-178		Et	
I-179		Et	
I-180		Et	
I-181		Et	

Table 25



(I-G)

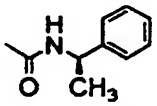
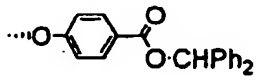
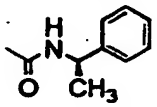
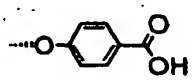
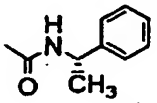
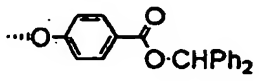
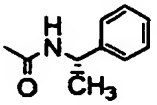
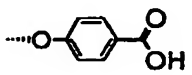
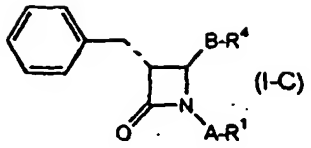
No.	A-R^1	B-R^4
I-182		
I-183		
I-184		
I-185		

Table 26



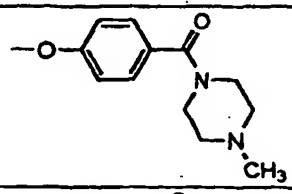
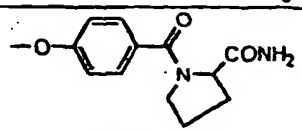
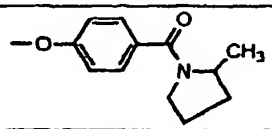
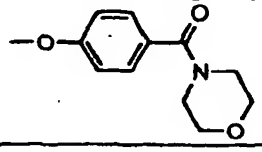
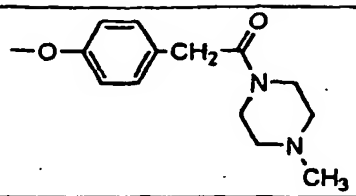
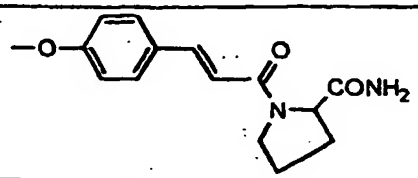
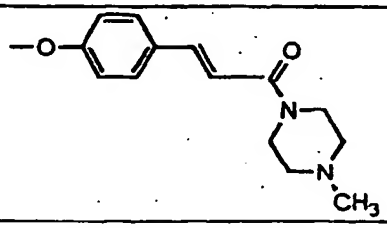
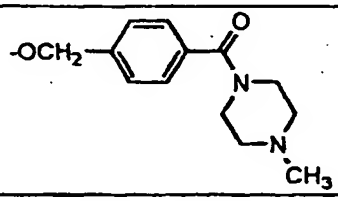
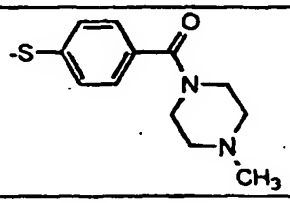
	AR^1	BR^4
I-186	COPh	OPh-3-COOH
I-187	COPh	OPh-4-COOH
I-188	COPh	OPh-4-COOBn
I-189	COPh	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-190	COPh	
I-191	COPh	
I-192	COPh	
I-193	COPh	
I-194	COPh	OPh-4-CONHCH$_2$CH=CH$_2$
I-195	COPh	OPh-4-CONHBn
I-196	COPh	OPh-4-CONHPh
I-197	COPh	-OPh-4-COO$(CH_2)_2NMe_2$
I-198	COPh	OPh-4-COOCHPh$_2$
I-199	COPh	OPh-4-CH$_2$COOH

Table 27

I-200	COPh	
I-201	COPh	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-202	COPh	OPh-4-CH=CHCOOH
I-203	COPh	
I-204	COPh	
I-205	COPh	OCH_2Ph-4-COOH
I-206	COPh	
I-207	COPh	SPh-4-COOH
I-208	COPh	
I-209	CO-3,4-MD-Ph	OPh-3-COOH

-MD-Ph···methylenedioxyphenyl

Table 28

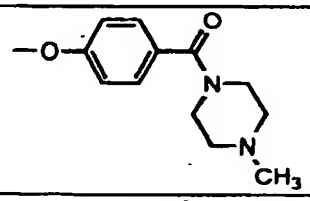
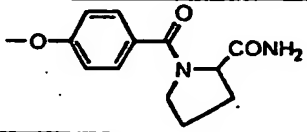
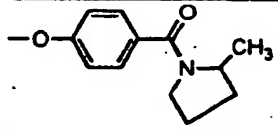
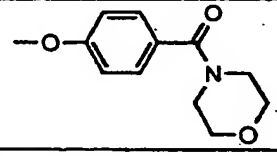
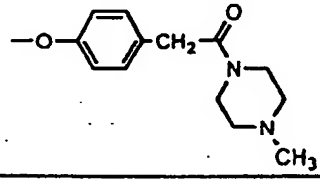
I-210	CO-3,4-MD-Ph	OPh-4-COOH
I-211	CO-3,4-MD-Ph	OPh-4-COOBn
I-212	CO-3,4-MD-Ph	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-213	CO-3,4-MD-Ph	
I-214	CO-3,4-MD-Ph	
I-215	CO-3,4-MD-Ph	
I-216	CO-3,4-MD-Ph	
I-217	CO-3,4-MD-Ph	OPh-4-CONHCH$_2$CH=CH$_2$
I-218	CO-3,4-MD-Ph	OPh-4-CONHBn
I-219	CO-3,4-MD-Ph	OPh-4-CONHPh
I-220	CO-3,4-MD-Ph	OPh-4-COO$(CH_2)_2NMe_2$
I-221	CO-3,4-MD-Ph	OPh-4-COOCHPh$_2$
I-222	CO-3,4-MD-Ph	OPh-4-CH$_2$COOH
I-223	CO-3,4-MD-Ph	

Table 29

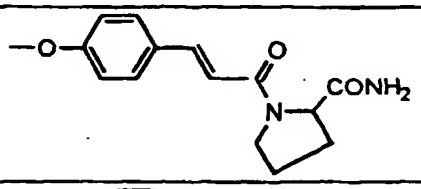
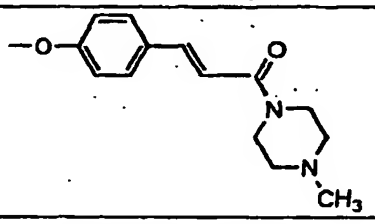
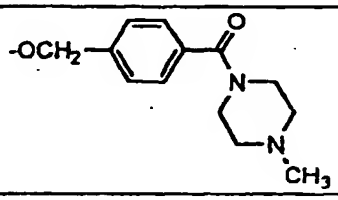
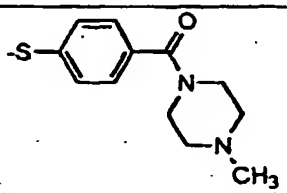
I-224	CO-3,4-MD-Ph	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-225	CO-3,4-MD-Ph	OPh-4-CH=CHCOOH
I-226	CO-3,4-MD-Ph	
I-227	CO-3,4-MD-Ph	
I-228	CO-3,4-MD-Ph	OCH_2Ph-4-COOH
I-229	CO-3,4-MD-Ph	
I-230	CO-3,4-MD-Ph	SPh-4-COOH
I-231	CO-3,4-MD-Ph	
I-232	CONHPh	OPh-3-COOH
I-233	CONHPh	OPh-4-COOH
I-234	CONHPh	OPh-4-COOBn
I-235	CONHPh	OPh-4-CON(Me)$(CH_2)_2NMe_2$

Table 30

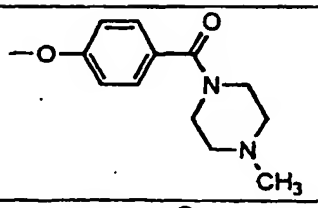
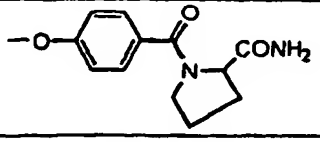
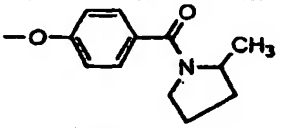
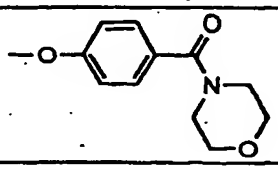
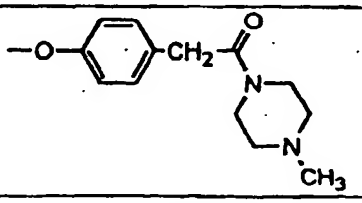
I-236	CONHPh	
I-237	CONHPh	
I-238	CONHPh	
I-239	CONHPh	
I-240	CONHPh	OPh-4-CONHCH$_2$CH=CH$_2$
I-241	CONHPh	OPh-4-CONHBn
I-242	CONHPh	OPh-4-CONHPh
I-243	CONHPh	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-244	CONHPh	OPh-4-COOCHPh$_2$
I-245	CONHPh	OPh-4-CH$_2$COOH
I-246	CONHPh	
I-247	CONHPh	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-248	CONHPh	OPh-4-CH=CHCOOH

Table 31

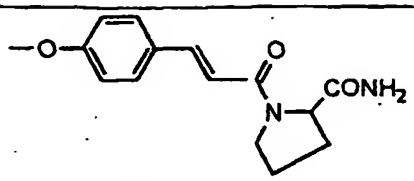
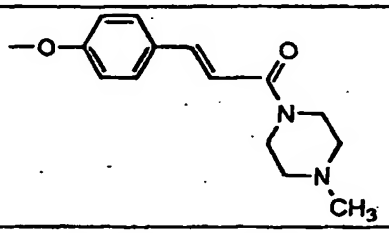
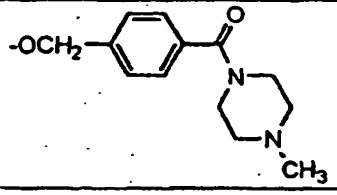
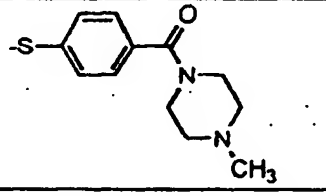
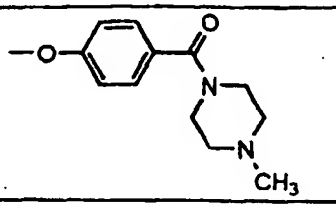
I-249	CONHPh	
I-250	CONHPh	
I-251	CONHPh	OCH_2Ph-4-COOH
I-252	CONHPh	
I-253	CONHPh	SPh-4-COOH
I-254	CONHPh	
I-255	CONHPh-4-OMe	OPh-3-COOH
I-256	CONHPh-4-OMe	OPh-4-COOH
I-257	CONHPh-4-OMe	OPh-4-COOBn
I-258	CONHPh-4-OMe	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-259	CONHPh-4-OMe	

Table 32

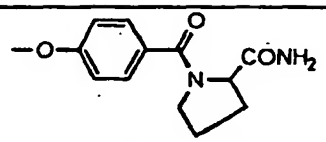
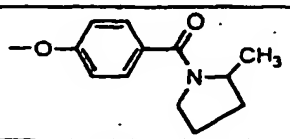
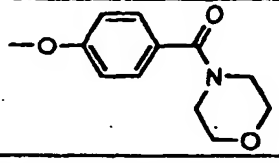
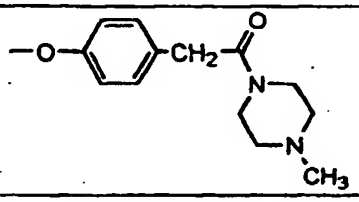
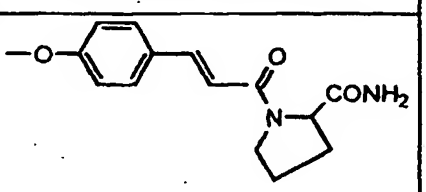
I-260	CONHPh-4-OMe	
I-261	CONHPh-4-OMe	
I-262	CONHPh-4-OMe	
I-263	CONHPh-4-OMe	OPh-4-CONHCH$_2$CH=CH$_2$
I-264	CONHPh-4-OMe	OPh-4-CONHBn
I-265	CONHPh-4-OMe	OPh-4-CONHPh
I-266	CONHPh-4-OMe	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-267	CONHPh-4-OMe	OPh-4-COOCHPh$_2$
I-268	CONHPh-4-OMe	OPh-4-CH$_2$COOH
I-269	CONHPh-4-OMe	
I-270	CONHPh-4-OMe	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-271	CONHPh-4-OMe	OPh-4-CH=CHCOOH
I-272	CONHPh-4-OMe	

Table 33

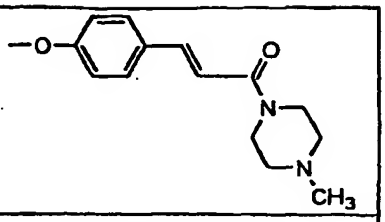
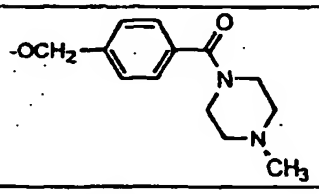
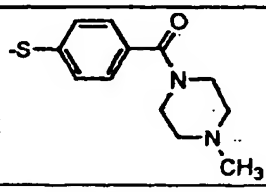
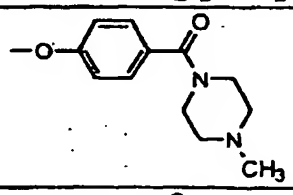
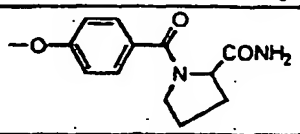
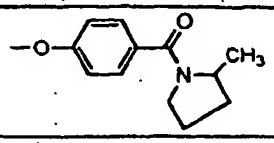
I-273	CONHPh-4-OMe	
I-274	CONHPh-4-OMe	OCH_2Ph-4-COOH
I-275	CONHPh-4-OMe	
I-276	CONHPh-4-OMe	SPh-4-COOH
I-277	CONHPh-4-OMe	
I-278	CONHPh-4-Cl	OPh-3-COOH
I-279	CONHPh-4-Cl	OPh-4-COOH
I-280	CONHPh-4-Cl	OPh-4-COOBn
I-281	CONHPh-4-Cl	OPh-4-$CON(Me)(CH_2)_2NMe_2$
I-282	CONHPh-4-Cl	
I-283	CONHPh-4-Cl	
I-284	CONHPh-4-Cl	

Table 34

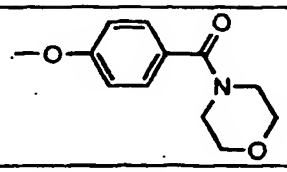
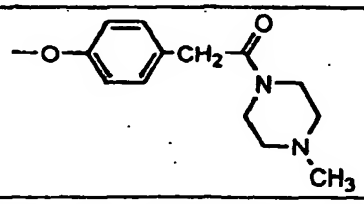
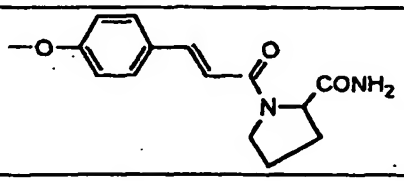
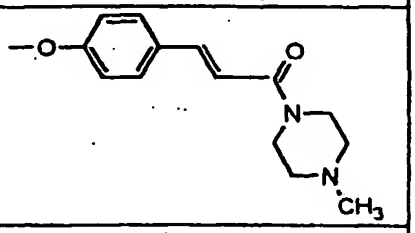
I-285	CONHPh-4-Cl	
I-286	CONHPh-4-Cl	OPh-4-CONHCH$_2$CH=CH$_2$
I-287	CONHPh-4-Cl	OPh-4-CONHBn
I-288	CONHPh-4-Cl	OPh-4-CONHPh
I-289	CONHPh-4-Cl	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-290	CONHPh-4-Cl	OPh-4-COOCHPh$_2$
I-291	CONHPh-4-Cl	OPh-4-CH$_2$COOH
I-292	CONHPh-4-Cl	
I-293	CONHPh-4-Cl	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-294	CONHPh-4-Cl	OPh-4-CH=CHCOOH
I-295	CONHPh-4-Cl	
I-296	CONHPh-4-Cl	
I-297	CONHPh-4-Cl	OCH$_2$Ph-4-COOH

Table 35

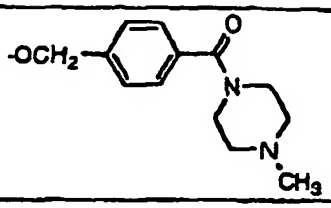
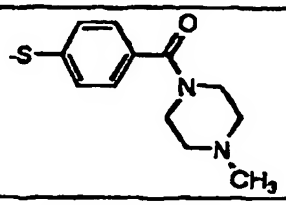
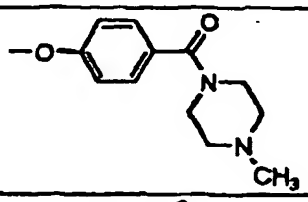
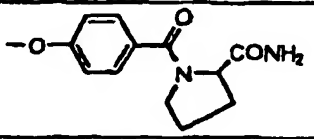
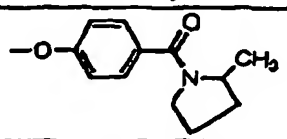
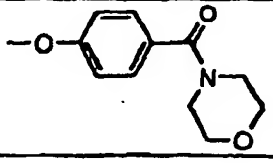
I-298	CONHPh-4-Cl	
I-299	CONHPh-4-Cl	SPh-4-COOH
I-300	CONHPh-4-Cl	
I-301	CONHPh-4-COOEt	OPh-3-COOH
I-302	CONHPh-4-COOEt	OPh-4-COOH
I-303	CONHPh-4-COOEt	OPh-4-COOBn
I-304	CONHPh-4-COOEt	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-305	CONHPh-4-COOEt	
I-306	CONHPh-4-COOEt	
I-307	CONHPh-4-COOEt	
I-308	CONHPh-4-COOEt	

Table 36

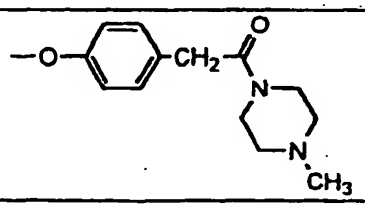
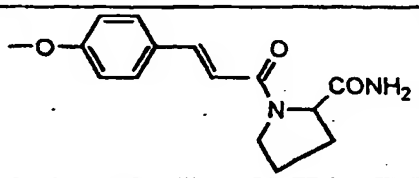
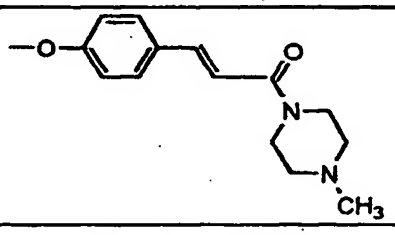
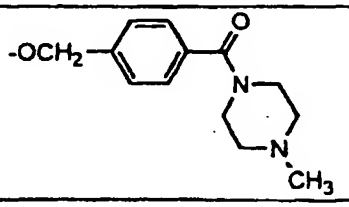
I-309	CONHPh-4-COOEt	OPh-4-CONHCH$_2$CH=CH$_2$
I-310	CONHPh-4-COOEt	OPh-4-CONHBn
I-311	CONHPh-4-COOEt	OPh-4-CONHPh
I-312	CONHPh-4-COOEt	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-313	CONHPh-4-COOEt	OPh-4-COOCHPh$_2$
I-314	CONHPh-4-COOEt	OPh-4-CH$_2$COOH
I-315	CONHPh-4-COOEt	
I-316	CONHPh-4-COOEt	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-317	CONHPh-4-COOEt	OPh-4-CH=CHCOOH
I-318	CONHPh-4-COOEt	
I-319	CONHPh-4-COOEt	
I-320	CONHPh-4-COOEt	OCH$_2$Ph-4-COOH
I-321	CONHPh-4-COOEt	

Table 37

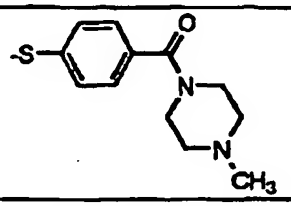
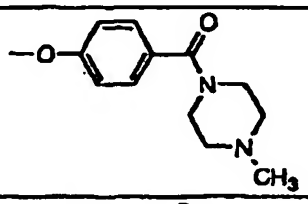
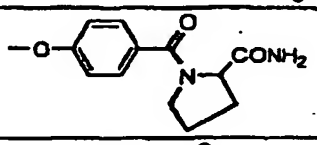
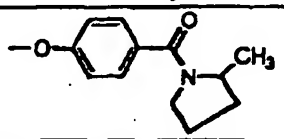
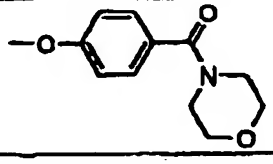
I-322	CONHPh-4-COOEt	SPh-4-COOH
I-323	CONHPh-4-COOEt	
I-324	CONHPh-3-Me	OPh-3-COOH
I-325	CONHPh-3-Me	OPh-4-COOH
I-326	CONHPh-3-Me	OPh-4-COOBn
I-327	CONHPh-3-Me	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-328	CONHPh-3-Me	
I-329	CONHPh-3-Me	
I-330	CONHPh-3-Me	
I-331	CONHPh-3-Me	
I-332	CONHPh-3-Me	OPh-4-$CONHCH_2CH=CH_2$
I-333	CONHPh-3-Me	OPh-4-CONHBn
I-334	CONHPh-3-Me	OPh-4-CONHPh

Table 38

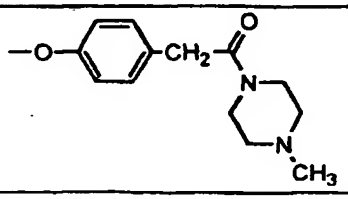
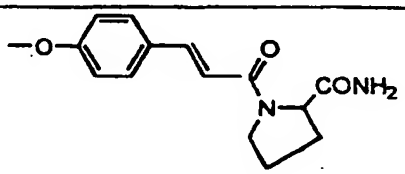
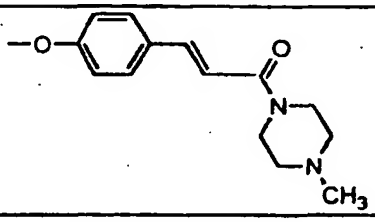
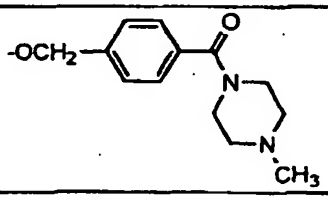
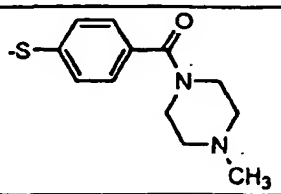
I-335	CONHPh-3-Me	OPh-4-COO$(CH_2)_2NMe_2$
I-336	CONHPh-3-Me	OPh-4-$COOCHPh_2$
I-337	CONHPh-3-Me	OPh-4-CH_2COOH
I-338	CONHPh-3-Me	
I-339	CONHPh-3-Me	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-340	CONHPh-3-Me	OPh-4-CH=CHCOOH
I-341	CONHPh-3-Me	
I-342	CONHPh-3-Me	
I-343	CONHPh-3-Me	OCH_2Ph-4-COOH
I-344	CONHPh-3-Me	
I-345	CONHPh-3-Me	SPh-4-COOH
I-346	CONHPh-3-Me	

Table 39

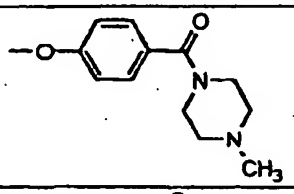
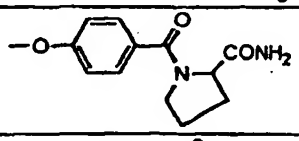
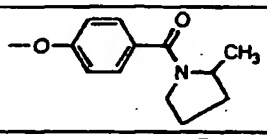
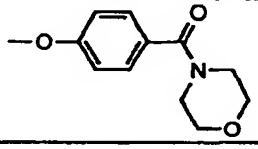
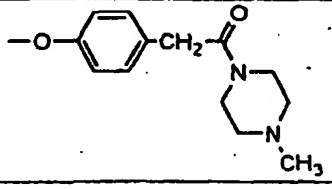
I-347	CONHPh-2-OMe	OPh-3-COOH
I-348	CONHPh-2-OMe	OPh-4-COOH
I-349	CONHPh-2-OMe	OPh-4-COOBn
I-350	CONHPh-2-OMe	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-351	CONHPh-2-OMe	
I-352	CONHPh-2-OMe	
I-353	CONHPh-2-OMe	
I-354	CONHPh-2-OMe	
I-355	CONHPh-2-OMe	OPh-4-$CONHCH_2CH=CH_2$
I-356	CONHPh-2-OMe	OPh-4-CONHBn
I-357	CONHPh-2-OMe	OPh-4-CONHPh
I-358	CONHPh-2-OMe	OPh-4-$COO(CH_2)_2NMe_2$
I-359	CONHPh-2-OMe	OPh-4-$COOCHPh_2$
I-360	CONHPh-2-OMe	OPh-4-CH_2COOH
I-361	CONHPh-2-OMe	

Table 40

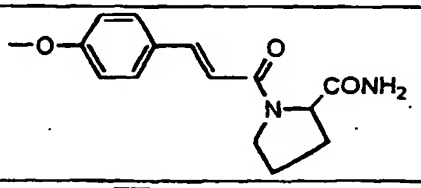
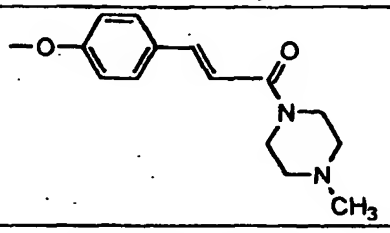
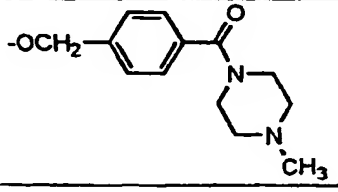
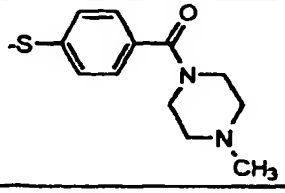
I-362	CONHPh-2-OMe	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-363	CONHPh-2-OMe	OPh-4-CH=CHCOOH
I-364	CONHPh-2-OMe	
I-365	CONHPh-2-OMe	
I-366	CONHPh-2-OMe	OCH_2Ph-4-COOH
I-367	CONHPh-2-OMe	
I-368	CONHPh-2-OMe	SPh-4-COOH
I-369	CONHPh-2-OMe	
I-370	CONHBn	OPh-3-COOH
I-371	CONHBn	OPh-4-COOH
I-372	CONHBn	OPh-4-COOBn
I-373	CONHBn	OPh-4-$CON(Me)(CH_2)_2NMe_2$

Table 41

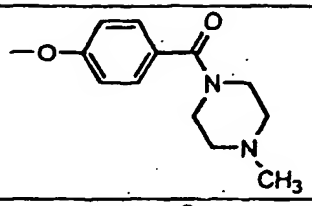
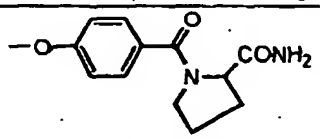
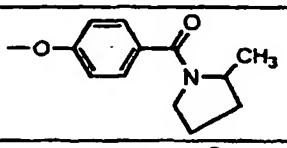
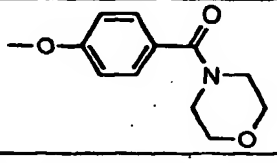
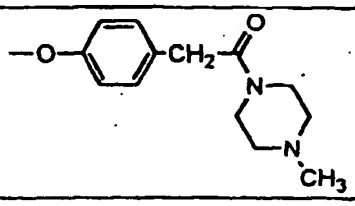
I-374	CONHBn	
I-375	CONHBn	
I-376	CONHBn	
I-377	CONHBn	
I-378	CONHBn	OPh-4-CONHCH$_2$CH=CH$_2$
I-379	CONHBn	OPh-4-CONHBn
I-380	CONHBn	OPh-4-CONHPh
I-381	CONHBn	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-382	CONHBn	OPh-4-COOCHPh$_2$
I-383	CONHBn	OPh-4-CH$_2$COOH
I-384	CONHBn	
I-385	CONHBn	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-386	CONHBn	OPh-4-CH=CHCOOH

Table 42

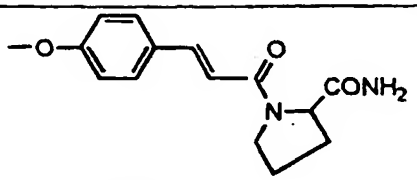
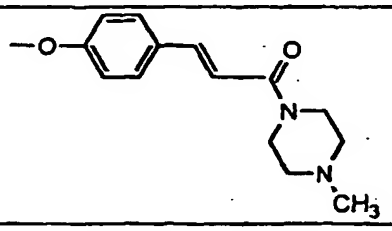
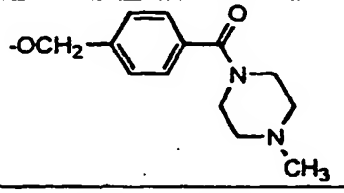
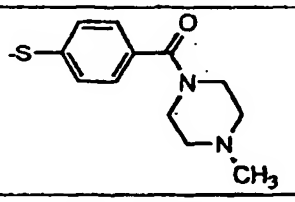
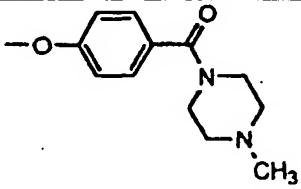
I-387	CONHBn	
I-388	CONHBn	
I-389	CONHBn	OCH_2Ph-4-COOH
I-390	CONHBn	
I-391	CONHBn	SPh-4-COOH
I-392	CONHBn	
I-393	CONHCH(Et)Ph	OPh-3-COOH
I-394	CONHCH(Et)Ph	OPh-4-COOH
I-395	CONHCH(Et)Ph	OPh-4-COOBn
I-396	CONHCH(Et)Ph	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-397	CONHCH(Et)Ph	

Table 43

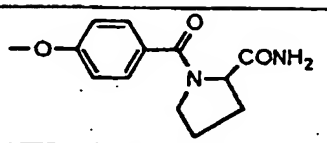
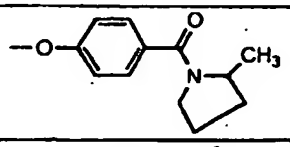
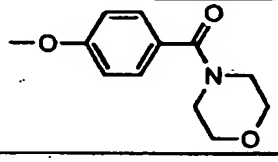
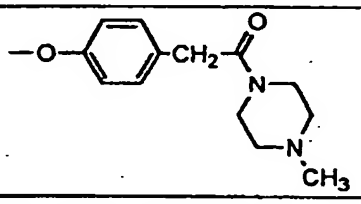
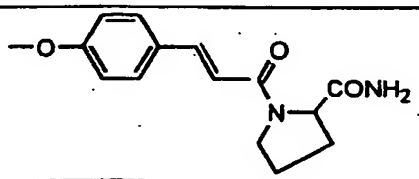
I-398	CONHCH(Et)Ph	
I-399	CONHCH(Et)Ph	
I-400	CONHCH(Et)Ph	
I-401	CONHCH(Et)Ph	OPh-4-CONHCH$_2$CH=CH$_2$
I-402	CONHCH(Et)Ph	OPh-4-CONHBn
I-403	CONHCH(Et)Ph	OPh-4-CONHPh
I-404	CONHCH(Et)Ph	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-405	CONHCH(Et)Ph	
I-406	CONHCH(Et)Ph	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-407	CONHCH(Et)Ph	OPh-4-CH=CHCOOH
I-408	CONHCH(Et)Ph	

Table 44

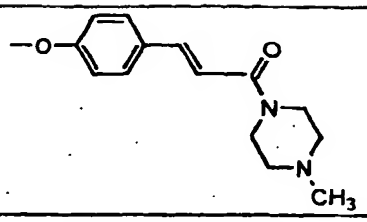
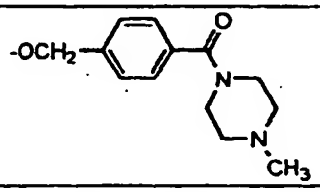
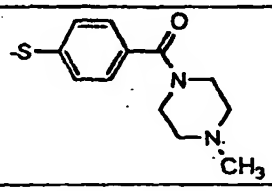
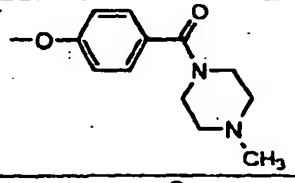
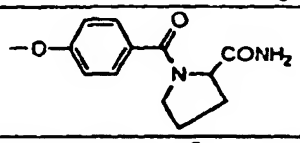
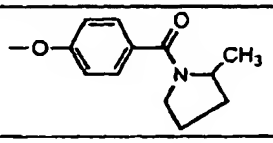
I-409	CONHCH(Et)Ph	
I-410	CONHCH(Et)Ph	OCH_2Ph-4-COOH
I-411	CONHCH(Et)Ph	
I-412	CONHCH(Et)Ph	SPh-4-COOH
I-413	CONHCH(Et)Ph	
I-414	CONHCH(OMe)Ph	OPh-3-COOH
I-415	CONHCH(OMe)Ph	OPh-4-COOH
I-416	CONHCH(OMe)Ph	OPh-4-COOBn
I-417	CONHCH(OMe)Ph	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-418	CONHCH(OMe)Ph	
I-419	CONHCH(OMe)Ph	
I-420	CONHCH(OMe)Ph	

Table 45

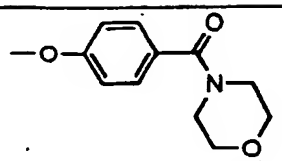
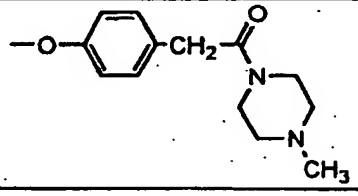
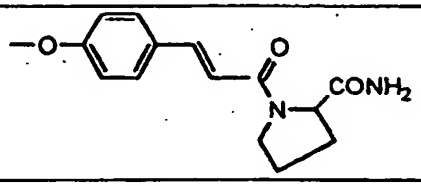
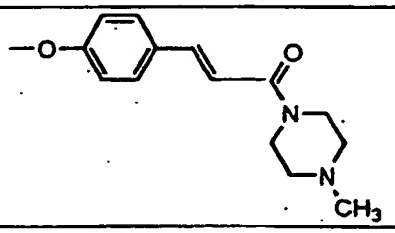
I-421	CONHCH(OMe)Ph	
I-422	CONHCH(OMe)Ph	OPh-4-CONHCH$_2$CH=CH$_2$
I-423	CONHCH(OMe)Ph	OPh-4-CONHBn
I-424	CONHCH(OMe)Ph	OPh-4-CONHPh
I-425	CONHCH(OMe)Ph	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-426	CONHCH(OMe)Ph	OPh-4-COOCHPh$_2$
I-427	CONHCH(OMe)Ph	OPh-4-CH$_2$COOH
I-428	CONHCH(OMe)Ph	
I-429	CONHCH(OMe)Ph	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-430	CONHCH(OMe)Ph	OPh-4-CH=CHCOOH
I-431	CONHCH(OMe)Ph	
I-432	CONHCH(OMe)Ph	
I-433	CONHCH(OMe)Ph	OCH$_2$Ph-4-COOH

Table 46

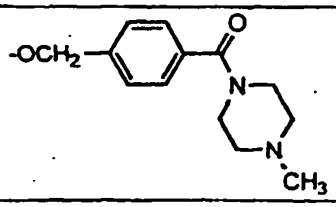
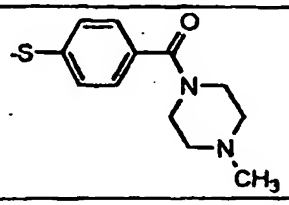
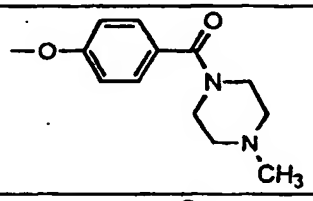
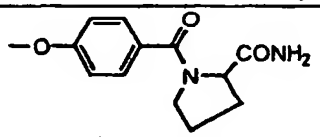
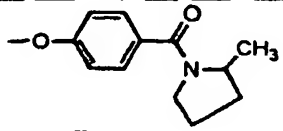
I-434	CONHCH(OMe)Ph	
I-435	CONHCH(OMe)Ph	SPh-4-COOH
I-436	CONHCH(OMe)Ph	
I-437	CONHCHPh$_2$	OPh-3-COOH
I-438	CONHCHPh$_2$	OPh-4-COOBn
I-439	CONHCHPh$_2$	OPh-4-CON(Me)(CH$_2$)$_2$NMe$_2$
I-440	CONHCHPh$_2$	
I-441	CONHCHPh$_2$	
I-442	CONHCHPh$_2$	

Table 47

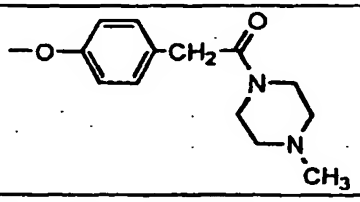
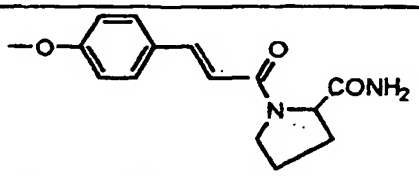
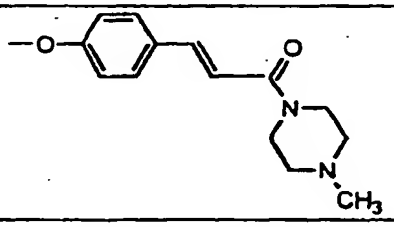
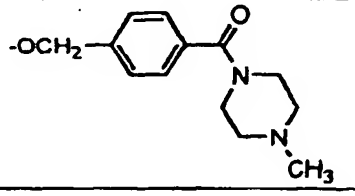
I-443	$CONHCHPh_2$	$OPh\text{-}4\text{-}CONHCH_2CH{=}CH_2$
I-444	$CONHCHPh_2$	OPh-4-CONHBn
I-445	$CONHCHPh_2$	OPh-4-CONHPh
I-446	$CONHCHPh_2$	$OPh\text{-}4\text{-}COO(CH_2)_2NMe_2$
I-447	$CONHCHPh_2$	
I-448	$CONHCHPh_2$	$OPh\text{-}4\text{-}CH_2COO(CH_2)_2NMe_2$
I-449	$CONHCHPh_2$	OPh-4-CH=CHCOOH
I-450	$CONHCHPh_2$	
I-451	$CONHCHPh_2$	
I-452	$CONHCHPh_2$	$OCH_2Ph\text{-}4\text{-}COOH$
I-453	$CONHCHPh_2$	

Table 48

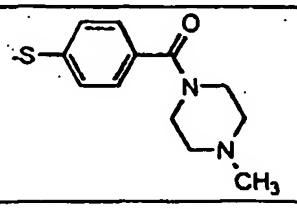
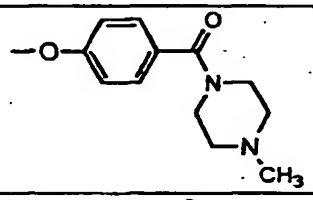
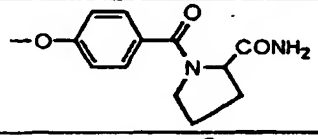
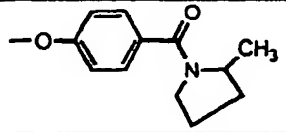
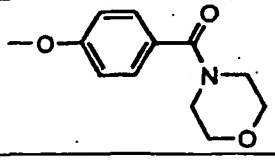
I-454	$CONHCHPh_2$	SPh-4-COOH
I-455	$CONHCHPh_2$	
I-456	COPh-3-OMe	OPh-3-COOH
I-457	COPh-3-OMe	OPh-4-COOH
I-458	COPh-3-OMe	OPh-4-COOBn
I-459	COPh-3-OMe	$OPh\text{-}4\text{-}CON(Me)(CH_2)_2NMe_2$
I-460	COPh-3-OMe	
I-461	COPh-3-OMe	
I-462	COPh-3-OMe	
I-463	COPh-3-OMe	
I-464	COPh-3-OMe	$OPh\text{-}4\text{-}CONHCH_2CH{=}CH_2$
I-465	COPh-3-OMe	OPh-4-CONHBn
I-466	COPh-3-OMe	OPh-4-CONHPh

Table 49

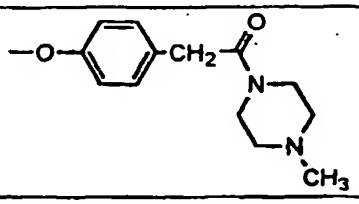
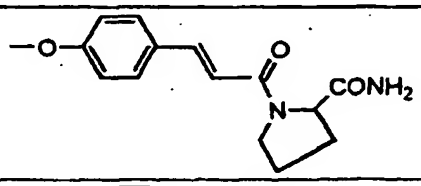
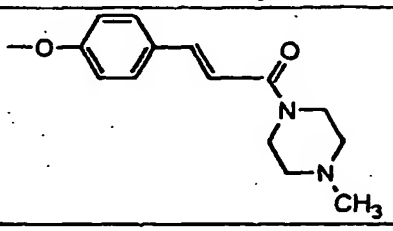
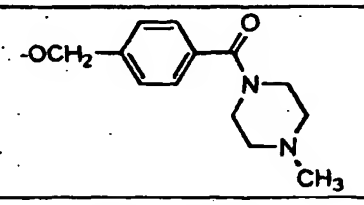
I-467	COPh-3-OMe	OPh-4-COO$(CH_2)_2NMe_2$
I-468	COPh-3-OMe	OPh-4-$COOCHPh_2$
I-469	COPh-3-OMe	OPh-4-CH_2COOH
I-470	COPh-3-OMe	
I-471	COPh-3-OMe	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-472	COPh-3-OMe	OPh-4-CH=CHCOOH
I-473	COPh-3-OMe	
I-474	COPh-3-OMe	
I-475	COPh-3-OMe	OCH_2Ph-4-COOH
I-476	COPh-3-OMe	
I-477	COPh-3-OMe	SPh-4-COOH

Table 50

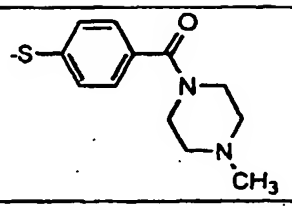
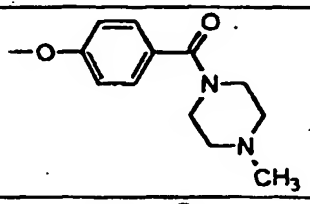
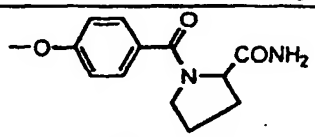
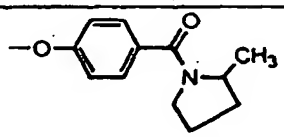
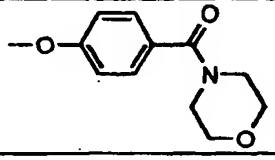
I-478	COPh-3-OMe	
I-479	SO_2Ph	OPh-3-COOH
I-480	SO_2Ph	OPh-4-COOH
I-481	SO_2Ph	OPh-4-COOBn
I-482	SO_2Ph	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-483	SO_2Ph	
I-484	SO_2Ph	
I-485	SO_2Ph	
I-486	SO_2Ph	
I-487	SO_2Ph	OPh-4-CONHCH$_2$CH=CH$_2$
I-488	SO_2Ph	OPh-4-CONHBn
I-489	SO_2Ph	OPh-4-CONHPh
I-490	SO_2Ph	OPh-4-COO$(CH_2)_2NMe_2$

Table 51

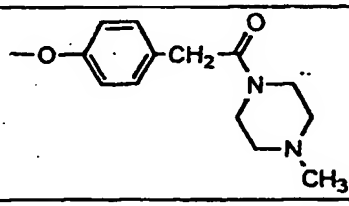
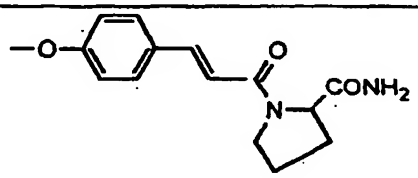
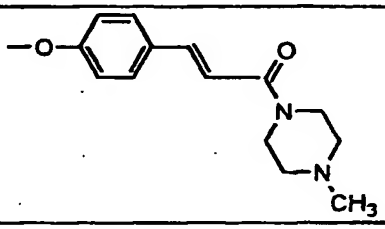
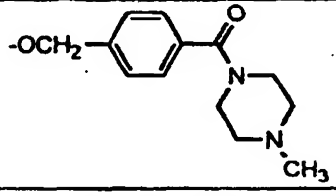
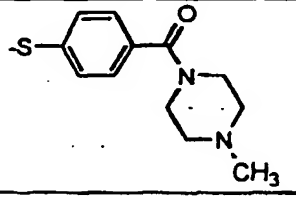
I-491	SO_2Ph	$OPh\text{-}4\text{-}COOCHPh_2$
I-492	SO_2Ph	$OPh\text{-}4\text{-}CH_2COOH$
I-493	SO_2Ph	
I-494	SO_2Ph	$OPh\text{-}4\text{-}CH_2COO(CH_2)_2NMe_2$
I-495	SO_2Ph	OPh-4-CH=CHCOOH
I-496	SO_2Ph	
I-497	SO_2Ph	
I-498	SO_2Ph	$OCH_2Ph\text{-}4\text{-}COOH$
I-499	SO_2Ph	
I-500	SO_2Ph	SPh-4-COOH
I-501	SO_2Ph	

Table 52

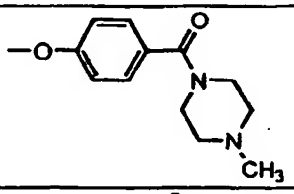
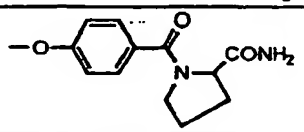
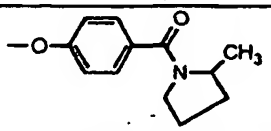
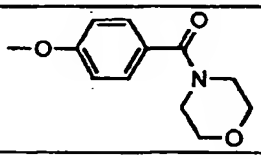
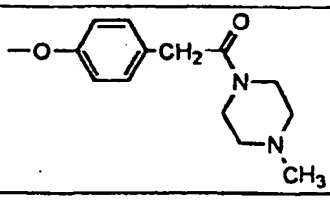
I-502	CONHCH(Et)Ph-4-Cl	OPh-3-COOH
I-503	CONHCH(Et)Ph-4-Cl	OPh-4-COOH
I-504	CONHCH(Et)Ph-4-Cl	OPh-4-COOBn
I-505	CONHCH(Et)Ph-4-Cl	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-506	CONHCH(Et)Ph-4-Cl	
I-507	CONHCH(Et)Ph-4-Cl	
I-508	CONHCH(Et)Ph-4-Cl	
I-509	CONHCH(Et)Ph-4-Cl	
I-510	CONHCH(Et)Ph-4-Cl	OPh-4-$CONHCH_2CH=CH_2$
I-511	CONHCH(Et)Ph-4-Cl	OPh-4-CONHBn
I-512	CONHCH(Et)Ph-4-Cl	OPh-4-CONHPh
I-513	CONHCH(Et)Ph-4-Cl	OPh-4-$COO(CH_2)_2NMe_2$
I-514	CONHCH(Et)Ph-4-Cl	OPh-4-$COOCHPh_2$
I-515	CONHCH(Et)Ph-4-Cl	OPh-4-CH_2COOH
I-516	CONHCH(Et)Ph-4-Cl	

Table 53

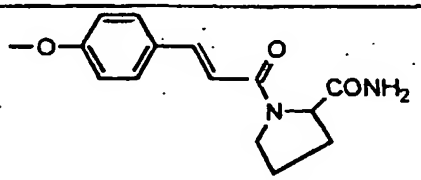
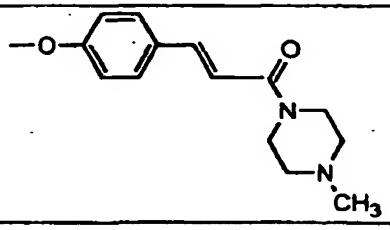
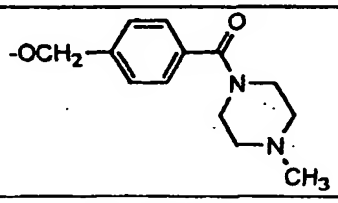
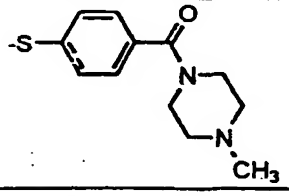
I-517	CONHCH(Et)Ph-4-Cl	OPh-4-$CH_2COO(CH_2)_2NMe_2$
I-518	CONHCH(Et)Ph-4-Cl	OPh-4-CH=CHCOOH
I-519	CONHCH(Et)Ph-4-Cl	
I-520	CONHCH(Et)Ph-4-Cl	
I-521	CONHCH(Et)Ph-4-Cl	OCH_2Ph-4-COOH
I-522	CONHCH(Et)Ph-4-Cl	
I-523	CONHCH(Et)Ph-4-Cl	SPh-4-COOH
I-524	CONHCH(Et)Ph-4-Cl	
I-525	CONHCH(Et)Ph-3-OMe	OPh-3-COOH
I-526	CONHCH(Et)Ph-3-OMe	OPh-4-COOH
I-527	CONHCH(Et)Ph-3-OMe	OPh-4-COOBn
I-528	CONHCH(Et)Ph-3-OMe	OPh-4-$CON(Me)(CH_2)_2NMe_2$

Table 54

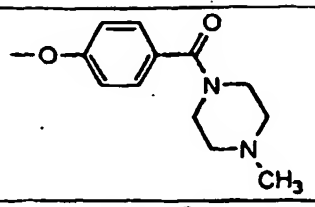
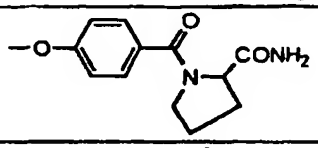
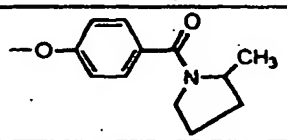
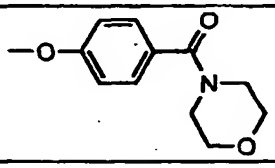
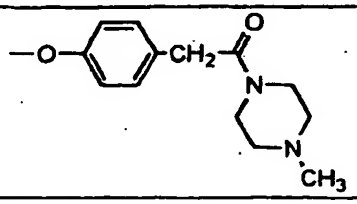
I-529	CONHCH(Et)Ph-3-OMe	
I-530	CONHCH(Et)Ph-3-OMe	
I-531	CONHCH(Et)Ph-3-OMe	
I-532	CONHCH(Et)Ph-3-OMe	
I-533	CONHCH(Et)Ph-3-OMe	OPh-4-CONHCH$_2$CH=CH$_2$
I-534	CONHCH(Et)Ph-3-OMe	OPh-4-CONHBn
I-535	CONHCH(Et)Ph-3-OMe	OPh-4-CONHPh
I-536	CONHCH(Et)Ph-3-OMe	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-537	CONHCH(Et)Ph-3-OMe	OPh-4-COOCHPh$_2$
I-538	CONHCH(Et)Ph-3-OMe	OPh-4-CH$_2$COOH
I-539	CONHCH(Et)Ph-3-OMe	
I-540	CONHCH(Et)Ph-3-OMe	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-541	CONHCH(Et)Ph-3-OMe	OPh-4-CH=CHCOOH

Table 55

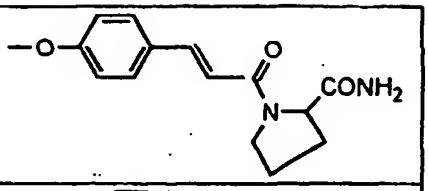
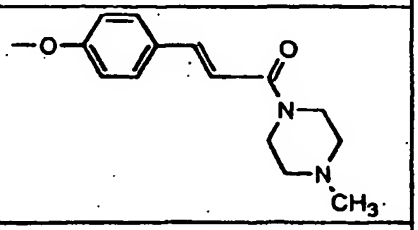
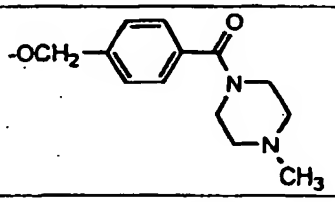
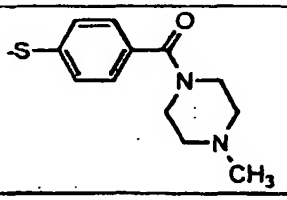
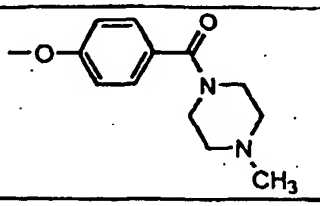
I-542	CONHCH(Et)Ph-3-OMe	
I-543	CONHCH(Et)Ph-3-OMe	
I-544	CONHCH(Et)Ph-3-OMe	OCH_2Ph-4-COOH
I-545	CONHCH(Et)Ph-3-OMe	
I-546	CONHCH(Et)Ph-3-OMe	SPh-4-COOH
I-547	CONHCH(Et)Ph-3-OMe	
I-548	CONHCH(Et)-3,4-MD-Ph	OPh-3-COOH
I-549	CONHCH(Et)-3,4-MD-Ph	OPh-4-COOH
I-550	CONHCH(Et)-3,4-MD-Ph	OPh-4-COOBn
I-551	CONHCH(Et)-3,4-MD-Ph	OPh-4-CON(Me)$(CH_2)_2NMe_2$
I-552	CONHCH(Et)-3,4-MD-Ph	

Table 56

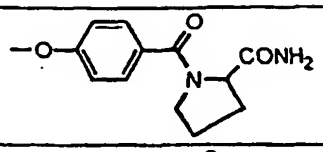
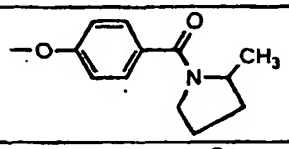
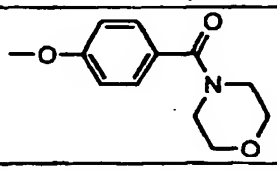
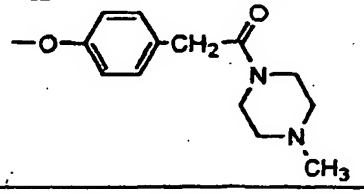
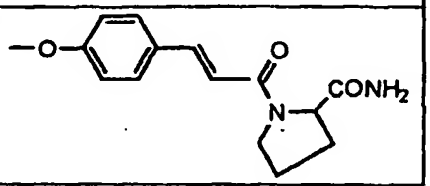
I-553	CONHCH(Et)-3,4-MD-Ph	
I-554	CONHCH(Et)-3,4-MD-Ph	
I-555	CONHCH(Et)-3,4-MD-Ph	
I-556	CONHCH(Et)-3,4-MD-Ph	OPh-4-CONHCH$_2$CH=CH$_2$
I-557	CONHCH(Et)-3,4-MD-Ph	OPh-4-CONHBn
I-558	CONHCH(Et)-3,4-MD-Ph	OPh-4-CONHPh
I-559	CONHCH(Et)-3,4-MD-Ph	OPh-4-COO(CH$_2$)$_2$NMe$_2$
I-560	CONHCH(Et)-3,4-MD-Ph	OPh-4-COOCHPh$_2$
I-561	CONHCH(Et)-3,4-MD-Ph	OPh-4-CH$_2$COOH
I-562	CONHCH(Et)-3,4-MD-Ph	
I-563	CONHCH(Et)-3,4-MD-Ph	OPh-4-CH$_2$COO(CH$_2$)$_2$NMe$_2$
I-564	CONHCH(Et)-3,4-MD-Ph	OPh-4-CH=CHCOOH
I-565	CONHCH(Et)-3,4-MD-Ph	

Table 57

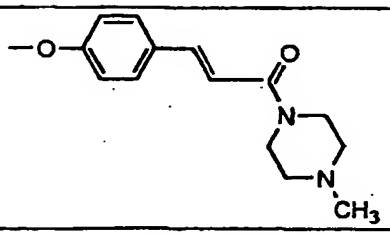
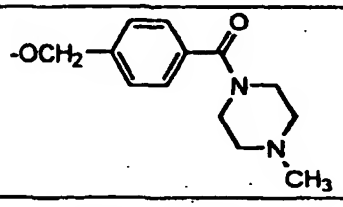
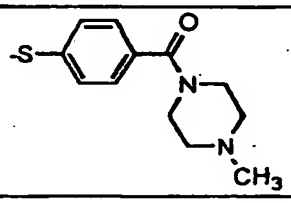
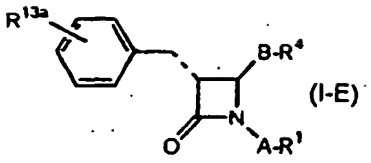
I-566	CONHCH(Et)-3,4-MD-Ph	
I-567	CONHCH(Et)-3,4-MD-Ph	OCH_2Ph-4-COOH
I-568	CONHCH(Et)-3,4-MD-Ph	
I-569	CONHCH(Et)-3,4-MD-Ph	SPh-4-COOH
I-570	CONHCH(Et)-3,4-MD-Ph	

Table 58



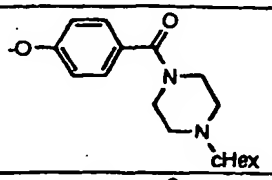
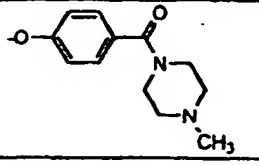
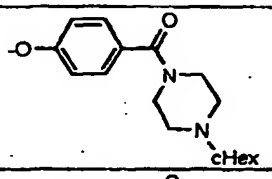
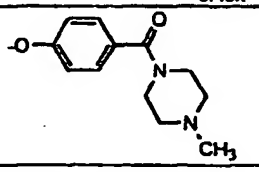
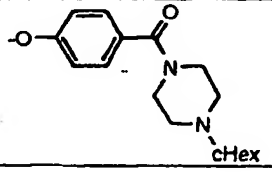
	AR^1	R^{13a}	BR^4
I-571	CONHCH(Me)Ph	m-NMe_2	
I-572	CONHCH(Me)Ph	m-NMe_2	
I-573	CONHCH(Me)Ph	m-NMe_2	OPh-4-CH_2COOH
I-574	CONHCH(Me)Ph	m-NMe_2	OPh-4-CH_2CH=CHCOOH
I-575	CONHCH(Me)Ph	m-NMe_2	SPh-3-CH_2COOH
I-576	CONHCH(Me)Ph	p-NHPh	
I-577	CONHCH(Me)Ph	p-NHPh	
I-578	CONHCH(Me)Ph	p-NHPh	OPh-4-CH_2COOH
I-579	CONHCH(Me)Ph	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-580	CONHCH(Me)Ph	p-NHPh	SPh-3-CH_2COOH
I-581	CONHCH(Me)Ph	o-SMe	

Table 59

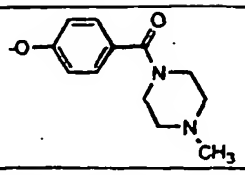
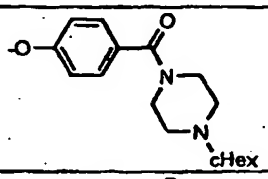
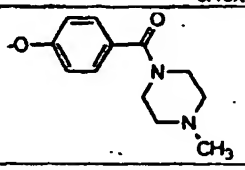
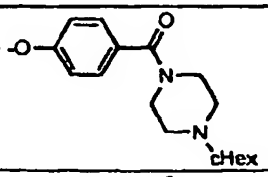
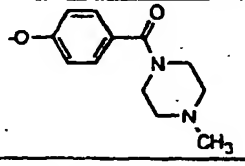
I-582	CONHCH(Me)Ph	o-SMe	
I-583	CONHCH(Me)Ph	o-SMe	OPh-4-CH_2COOH
I-584	CONHCH(Me)Ph	o-SMe	OPh-4-CH_2CH=CHCOOH
I-585	CONHCH(Me)Ph	o-SMe	SPh-3-CH_2COOH
I-586	CONHCH(Me)Ph	p-SPh	
I-587	CONHCH(Me)Ph	p-SPh	
I-588	CONHCH(Me)Ph	p-SPh	OPh-4-CH_2COOH
I-589	CONHCH(Me)Ph	p-SPh	OPh-4-CH_2CH=CHCOOH
I-590	CONHCH(Me)Ph	p-SPh	SPh-3-CH_2COOH
I-591	CONHCH(Me)Ph	p-Et	
I-592	CONHCH(Me)Ph	p-Et	
I-593	CONHCH(Me)Ph	p-Et	OPh-4-CH_2COOH
I-594	CONHCH(Me)Ph	p-Et	OPh-4-CH_2CH=CHCOOH
I-595	CONHCH(Me)Ph	p-Et	SPh-3-CH_2COOH

Table 60

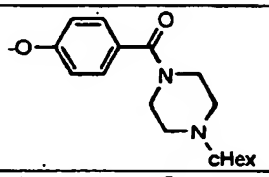
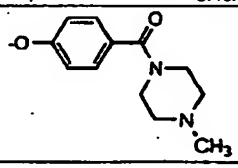
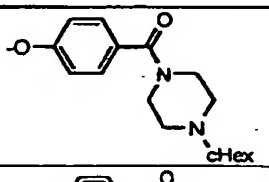
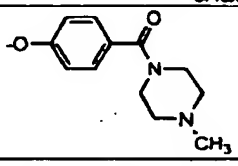
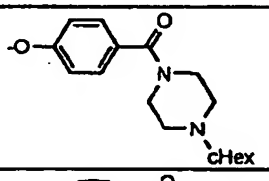
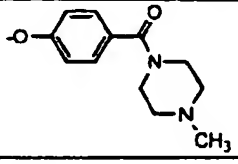
I-596	CONHCH(Me)Ph	p-Ph	
I-597	CONHCH(Me)Ph	p-Ph	
I-598	CONHCH(Me)Ph	p-Ph	OPh-4-CH_2COOH
I-599	CONHCH(Me)Ph	p-Ph	OPh-4-CH_2CH=$CHCOOH$
I-600	CONHCH(Me)Ph	p-Ph	SPh-3-CH_2COOH
I-601	$CONHCHPh_2$	m-NMe_2	
I-602	$CONHCHPh_2$	m-NMe_2	
I-603	$CONHCHPh_2$	m-NMe_2	OPh-4-CH_2COOH
I-604	$CONHCHPh_2$	m-NMe_2	OPh-4-CH_2CH=$CHCOOH$
I-605	$CONHCHPh_2$	m-NMe_2	SPh-3-CH_2COOH
I-606	$CONHCHPh_2$	p-NHPh	
I-607	$CONHCHPh_2$	p-NHPh	
I-608	$CONHCHPh_2$	p-NHPh	OPh-4-CH_2COOH

Table 61

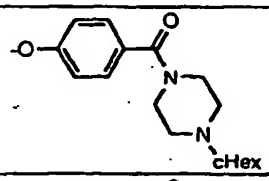
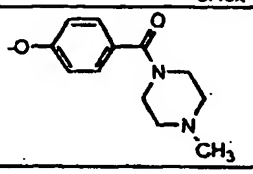
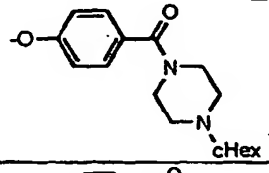
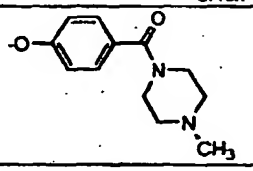
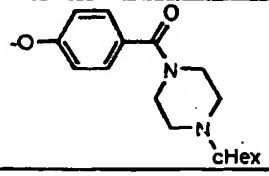
I-609	$CONHCHPh_2$	p-NHPh	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-610	$CONHCHPh_2$	p-NHPh	$SPh\text{-}3\text{-}CH_2COOH$
I-611	$CONHCHPh_2$	o-SMe	
I-612	$CONHCHPh_2$	o-SMe	
I-613	$CONHCHPh_2$	o-SMe	$OPh\text{-}4\text{-}CH_2COOH$
I-614	$CONHCHPh_2$	o-SMe	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-615	$CONHCHPh_2$	o-SMe	$SPh\text{-}3\text{-}CH_2COOH$
I-616	$CONHCHPh_2$	p-SPh	
I-617	$CONHCHPh_2$	p-SPh	
I-618	$CONHCHPh_2$	p-SPh	$OPh\text{-}4\text{-}CH_2COOH$
I-619	$CONHCHPh_2$	p-SPh	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-620	$CONHCHPh_2$	p-SPh	$SPh\text{-}3\text{-}CH_2COOH$
I-621	$CONHCHPh_2$	p-Et	

Table 62

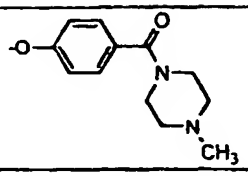
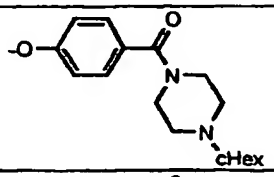
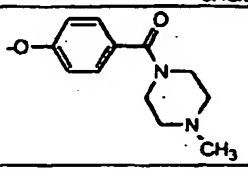
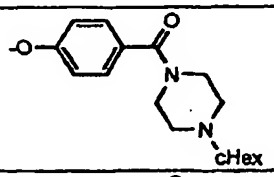
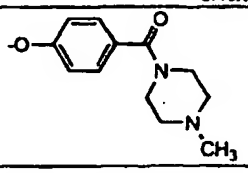
I-622	$CONHCHPh_2$	p-Et	
I-623	$CONHCHPh_2$	p-Et	$OPh\text{-}4\text{-}CH_2COOH$
I-624	$CONHCHPh_2$	p-Et	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-625	$CONHCHPh_2$	p-Et	$SPh\text{-}3\text{-}CH_2COOH$
I-626	$CONHCHPh_2$	p-Ph	
I-67	$CONHCHPh_2$	p-Ph	
I-628	$CONHCHPh_2$	p-Ph	$OPh\text{-}4\text{-}CH_2COOH$
I-629	$CONHCHPh_2$	p-Ph	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-630	$CONHCHPh_2$	p-Ph	$SPh\text{-}3\text{-}CH_2COOH$
I-631	$CONHCH(4\text{-}Me\text{-}C_6H_4)_2$	m-NMe_2	
I-632	$CONHCH(4\text{-}Me\text{-}C_6H_4)_2$	m-NMe_2	
I-633	$CONHCH(4\text{-}Me\text{-}C_6H_4)_2$	m-NMe_2	$OPh\text{-}4\text{-}CH_2COOH$
I-634	$CONHCH(4\text{-}Me\text{-}C_6H_4)_2$	m-NMe_2	$OPh\text{-}4\text{-}CH_2CH{=}CHCOOH$
I-635	$CONHCH(4\text{-}Me\text{-}C_6H_4)_2$	m-NMe_2	$SPh\text{-}3\text{-}CH_2COOH$

Table 63

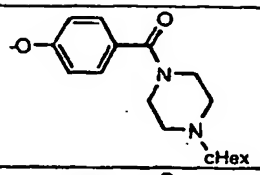
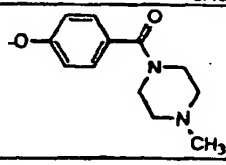
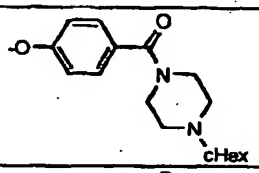
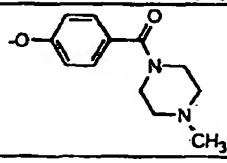
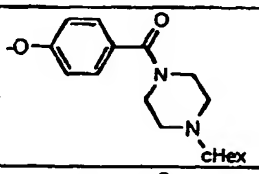
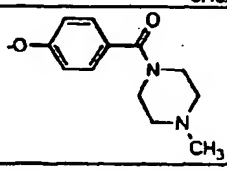
I-636	CONHCH(4-Me-C_6H_4)$_2$	p-NHPh	
I-637	CONHCH(4-Me-C_6H_4)$_2$	p-NHPh	
I-638	CONHCH(4-Me-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2COOH
I-639	CONHCH(4-Me-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-640	CONHCH(4-Me-C_6H_4)$_2$	p-NHPh	SPh-3-CH_2COOH
I-641	CONHCH(4-Me-C_6H_4)$_2$	o-SMe	
I-642	CONHCH(4-Me-C_6H_4)$_2$	o-SMe	
I-643	CONHCH(4-Me-C_6H_4)$_2$	o-SMe	OPh-4-CH_2COOH
I-644	CONHCH(4-Me-C_6H_4)$_2$	o-SMe	OPh-4-CH_2CH=CHCOOH
I-645	CONHCH(4-Me-C_6H_4)$_2$	o-SMe	SPh-3-CH_2COOH
I-646	CONHCH(4-Me-C_6H_4)$_2$	p-SPh	
I-647	CONHCH(4-Me-C_6H_4)$_2$	p-SPh	
I-648	CONHCH(4-Me-C_6H_4)$_2$	p-SPh	OPh-4-CH_2COOH

Table 64

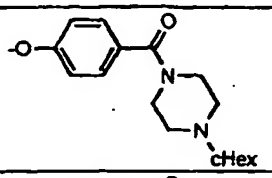
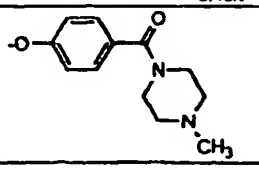
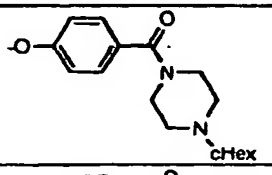
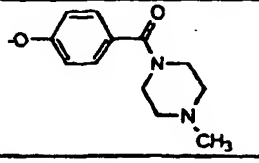
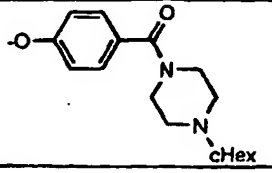
I-649	CONHCH(4-Me-C_6H_4)$_2$	p-SPh	OPh-4-CH_2CH=CHCOOH
I-650	CONHCH(4-Me-C_6H_4)$_2$	p-SPh	SPh-3-CH_2COOH
I-651	CONHCH(4-Me-C_6H_4)$_2$	p-Et	
I-652	CONHCH(4-Me-C_6H_4)$_2$	p-Et	
I-653	CONHCH(4-Me-C_6H_4)$_2$	p-Et	OPh-4-CH_2COOH
I-654	CONHCH(4-Me-C_6H_4)$_2$	p-Et	OPh-4-CH_2CH=CHCOOH
I-655	CONHCH(4-Me-C_6H_4)$_2$	p-Et	SPh-3-CH_2COOH
I-656	CONHCH(4-Me-C_6H_4)$_2$	p-Ph	
I-657	CONHCH(4-Me-C_6H_4)$_2$	p-Ph	
I-658	CONHCH(4-Me-C_6H_4)$_2$	p-Ph	OPh-4-CH_2COOH
I-659	CONHCH(4-Me-C_6H_4)$_2$	p-Ph	OPh-4-CH_2CH=CHCOOH
I-660	CONHCH(4-Me-C_6H_4)$_2$	p-Ph	SPh-3-CH_2COOH
I-661	CONHCH(3-OEt-C_6H_4)$_2$	m-NMe_2	

Table 65

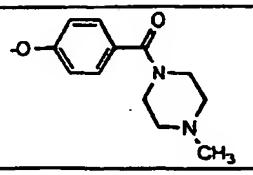
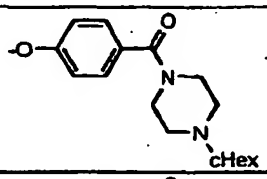
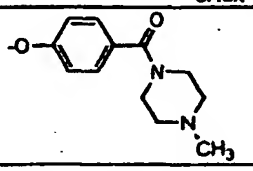
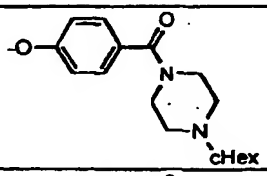
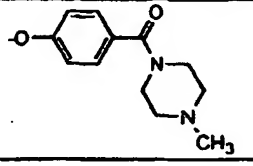
I-662	CONHCH(3-OEt-C_6H_4)$_2$	m-NMe_2	
I-663	CONHCH(3-OEt-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2COOH
I-664	CONHCH(3-OEt-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2CH=CHCOOH
I-665	CONHCH(3-OEt-C_6H_4)$_2$	m-NMe_2	SPh-3-CH_2COOH
I-666	CONHCH(3-OEt-C_6H_4)$_2$	p-NHPh	
I-667	CONHCH(3-OEt-C_6H_4)$_2$	p-NHPh	
I-668	CONHCH(3-OEt-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2COOH
I-669	CONHCH(3-OEt-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-670	CONHCH(3-OEt-C_6H_4)$_2$	p-NHPh	SPh-3-CH_2COOH
I-671	CONHCH(3-OEt-C_6H_4)$_2$	o-SMe	
I-672	CONHCH(3-OEt-C_6H_4)$_2$	o-SMe	
I-673	CONHCH(3-OEt-C_6H_4)$_2$	o-SMe	OPh-4-CH_2COOH
I-674	CONHCH(3-OEt-C_6H_4)$_2$	o-SMe	OPh-4-CH_2CH=CHCOOH
I-675	CONHCH(3-OEt-C_6H_4)$_2$	o-SMe	SPh-3-CH_2COOH

Table 66

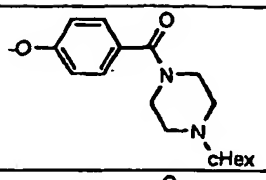
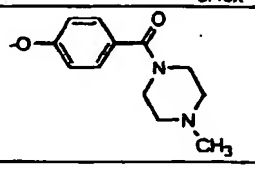
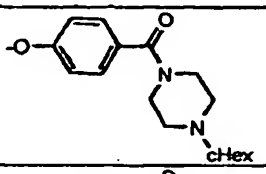
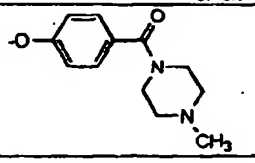
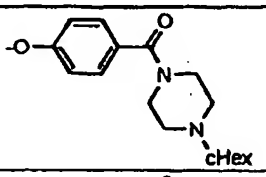
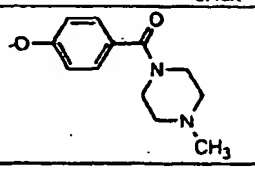
I-676	CONHCH(3-OEt-C_6H_4)$_2$	p-SPh	
I-677	CONHCH(3-OEt-C_6H_4)$_2$	p-SPh	
I-678	CONHCH(3-OEt-C_6H_4)$_2$	p-SPh	OPh-4-CH_2COOH
I-679	CONHCH(3-OEt-C_6H_4)$_2$	p-SPh	OPh-4-CH_2CH=CHCOOH
I-680	CONHCH(3-OEt-C_6H_4)$_2$	p-SPh	SPh-3-CH_2COOH
I-681	CONHCH(3-OEt-C_6H_4)$_2$	p-Et	
I-682	CONHCH(3-OEt-C_6H_4)$_2$	p-Et	
I-683	CONHCH(3-OEt-C_6H_4)$_2$	p-Et	OPh-4-CH_2COOH
I-684	CONHCH(3-OEt-C_6H_4)$_2$	p-Et	OPh-4-CH_2CH=CHCOOH
I-685	CONHCH(3-OEt-C_6H_4)$_2$	p-Et	SPh-3-CH_2COOH
I-686	CONHCH(3-OEt-C_6H_4)$_2$	p-Ph	
I-687	CONHCH(3-OEt-C_6H_4)$_2$	p-Ph	
I-688	CONHCH(3-OEt-C_6H_4)$_2$	p-Ph	OPh-4-CH_2COOH

Table 67

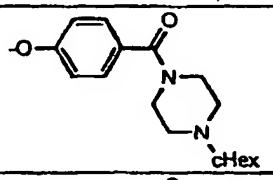
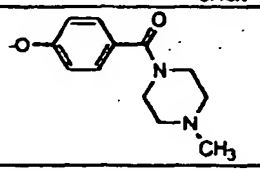
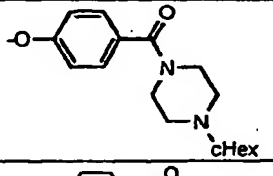
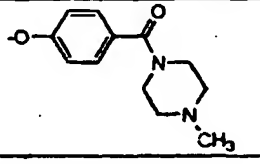
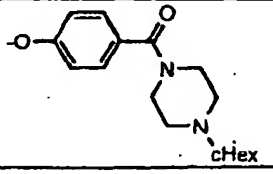
I-689	CONHCH(3-OEt-C_6H_4)$_2$	p-Ph	OPh-4-CH_2CH=CHCOOH
I-690	CONHCH(3-OEt-C_6H_4)$_2$	p-Ph	SPh-3-CH_2COOH
I-691	CONHCH(2-Cl-C_6H_4)$_2$	m-NMe_2	
I-692	CONHCH(2-Cl-C_6H_4)$_2$	m-NMe_2	
I-693	CONHCH(2-Cl-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2COOH
I-694	CONHCH(2-Cl-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2CH=CHCOOH
I-695	CONHCH(2-Cl-C_6H_4)$_2$	m-NMe_2	SPh-3-CH_2COOH
I-696	CONHCH(2-Cl-C_6H_4)$_2$	p-NHPh	
I-697	CONHCH(2-Cl-C_6H_4)$_2$	p-NHPh	
I-698	CONHCH(2-Cl-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2COOH
I-699	CONHCH(2-Cl-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-700	CONHCH(2-Cl-C_6H_4)$_2$	p-NHPh	SPh-3-CH_2COOH
I-701	CONHCH(2-Cl-C_6H_4)$_2$	o-SMe	

Table 68

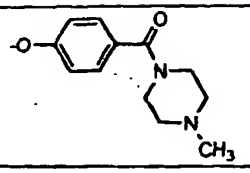
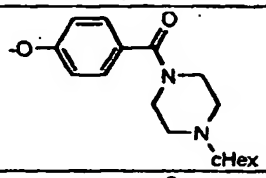
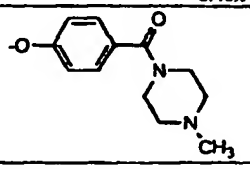
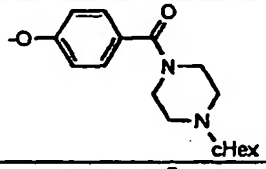
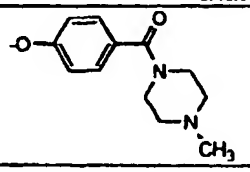
I-702	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	o-SMe	
I-703	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	o-SMe	OPh-4-CH_2COOH
I-704	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	o-SMe	OPh-4-CH_2CH=CHCOOH
I-705	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	o-SMe	SPh-3-CH_2COOH
I-706	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-SPh	
I-707	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-SPh	
I-708	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-SPh	OPh-4-CH_2COOH
I-709	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-SPh	OPh-4-CH_2CH=CHCOOH
I-710	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-SPh	SPh-3-CH_2COOH
I-711	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-Et	
I-712	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-Et	
I-713	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-Et	OPh-4-CH_2COOH
I-714	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-Et	OPh-4-CH_2CH=CHCOOH
I-715	$CONHCH(2\text{-}Cl\text{-}C_6H_4)_2$	p-Et	SPh-3-CH_2COOH

Table 69

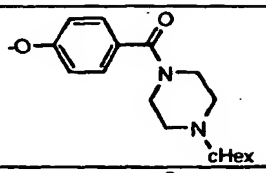
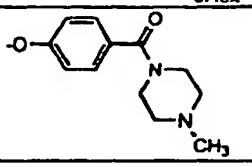
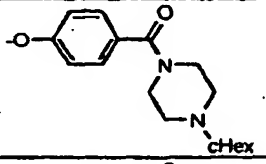
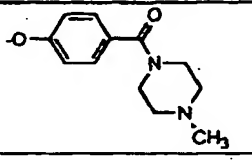
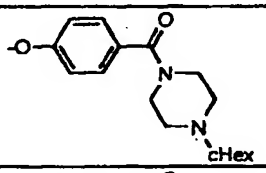
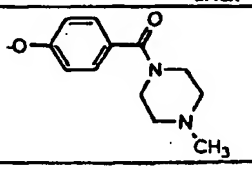
I-716	CONHCH(2-Cl-C_6H_4)$_2$	p-Ph	
I-717	CONHCH(2-Cl-C_6H_4)$_2$	p-Ph	
I-718	CONHCH(2-Cl-C_6H_4)$_2$	p-Ph	OPh-4-CH_2COOH
I-719	CONHCH(2-Cl-C_6H_4)$_2$	p-Ph	OPh-4-CH_2CH=$CHCOOH$
I-720	CONHCH(2-Cl-C_6H_4)$_2$	p-Ph	SPh-3-CH_2COOH
I-721	CONHCH(4-SMe-C_6H_4)$_2$	m-NMe_2	
I-722	CONHCH(4-SMe-C_6H_4)$_2$	m-NMe_2	
I-723	CONHCH(4-SMe-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2COOH
I-724	CONHCH(4-SMe-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2CH=$CHCOOH$
I-725	CONHCH(4-SMe-C_6H_4)$_2$	m-NMe_2	SPh-3-CH_2COOH
I-726	CONHCH(4-SMe-C_6H_4)$_2$	p-NHPh	
I-727	CONHCH(4-SMe-C_6H_4)$_2$	p-NHPh	
I-728	CONHCH(4-SMe-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2COOH

Table 70

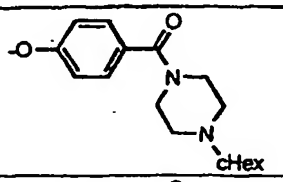
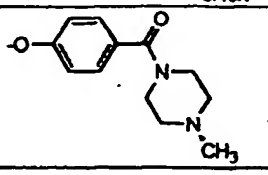
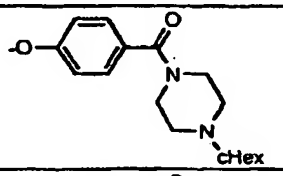
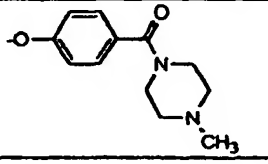
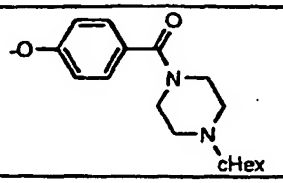
I-729	CONHCH(4-SMe-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-730	CONHCH(4-SMe-C_6H_4)$_2$	p-NHPh	SPh-3-CH_2COOH
I-731	CONHCH(4-SMe-C_6H_4)$_2$	o-SMe	
I-732	CONHCH(4-SMe-C_6H_4)$_2$	o-SMe	
I-733	CONHCH(4-SMe-C_6H_4)$_2$	o-SMe	OPh-4-CH_2COOH
I-734	CONHCH(4-SMe-C_6H_4)$_2$	o-SMe	OPh-4-CH_2CH=CHCOOH
I-735	CONHCH(4-SMe-C_6H_4)$_2$	o-SMe	SPh-3-CH_2COOH
I-736	CONHCH(4-SMe-C_6H_4)$_2$	p-SPh	
I-737	CONHCH(4-SMe-C_6H_4)$_2$	p-SPh	
I-738	CONHCH(4-SMe-C_6H_4)$_2$	p-SPh	OPh-4-CH_2COOH
I-739	CONHCH(4-SMe-C_6H_4)$_2$	p-SPh	OPh-4-CH_2CH=CHCOOH
I-740	CONHCH(4-SMe-C_6H_4)$_2$	p-SPh	SPh-3-CH_2COOH
I-741	CONHCH(4-SMe-C_6H_4)$_2$	p-Et	

Table 71

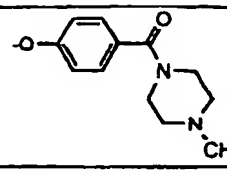
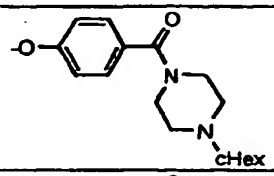
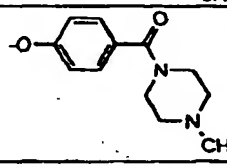
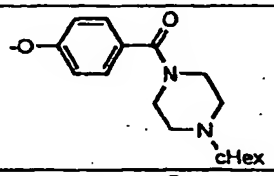
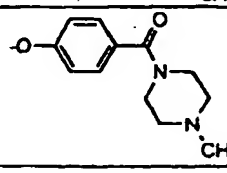
I-742	CONHCH(4-SMe-C_6H_4)$_2$	p-Et	
I-743	CONHCH(4-SMe-C_6H_4)$_2$	p-Et	OPh-4-CH_2COOH
I-744	CONHCH(4-SMe-C_6H_4)$_2$	p-Et	OPh-4-CH_2CH=CHCOOH
I-745	CONHCH(4-SMe-C_6H_4)$_2$	p-Et	SPh-3-CH_2COOH
I-746	CONHCH(4-SMe-C_6H_4)$_2$	p-Ph	
I-747	CONHCH(4-SMe-C_6H_4)$_2$	p-Ph	
I-748	CONHCH(4-SMe-C_6H_4)$_2$	p-Ph	OPh-4-CH_2COOH
I-749	CONHCH(4-SMe-C_6H_4)$_2$	p-Ph	OPh-4-CH_2CH=CHCOOH
I-750	CONHCH(4-SMe-C_6H_4)$_2$	p-Ph	SPh-3-CH_2COOH
I-751	CONHCH(3-NH_2-C_6H_4)$_2$	m-NMe_2	
I-752	CONHCH(3-NH_2-C_6H_4)$_2$	m-NMe_2	
I-753	CONHCH(3-NH_2-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2COOH
I-754	CONHCH(3-NH_2-C_6H_4)$_2$	m-NMe_2	OPh-4-CH_2CH=CHCOOH
I-755	CONHCH(3-NH_2-C_6H_4)$_2$	m-NMe_2	SPh-3-CH_2COOH

Table 72

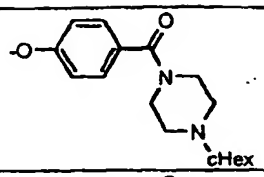
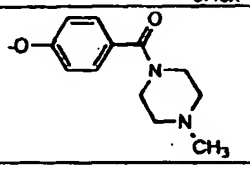
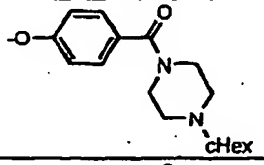
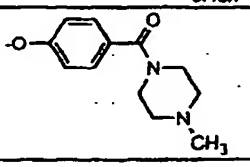
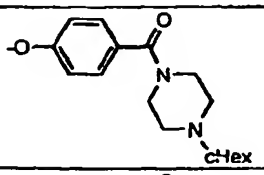
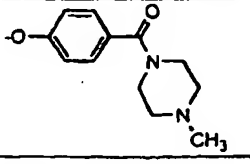
I-756	CONHCH(3-NH_2-C_6H_4)$_2$	p-NHPh	
I-757	CONHCH(3-NH_2-C_6H_4)$_2$	p-NHPh	
I-758	CONHCH(3-NH_2-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2COOH
I-759	CONHCH(3-NH_2-C_6H_4)$_2$	p-NHPh	OPh-4-CH_2CH=CHCOOH
I-760	CONHCH(3-NH_2-C_6H_4)$_2$	p-NHPh	SPh-3-CH_2COOH
I-761	CONHCH(3-NH_2-C_6H_4)$_2$	o-SMe	
I-762	CONHCH(3-NH_2-C_6H_4)$_2$	o-SMe	
I-763	CONHCH(3-NH_2-C_6H_4)$_2$	o-SMe	OPh-4-CH_2COOH
I-764	CONHCH(3-NH_2-C_6H_4)$_2$	o-SMe	OPh-4-CH_2CH=CHCOOH
I-765	CONHCH(3-NH_2-C_6H_4)$_2$	o-SMe	SPh-3-CH_2COOH
I-766	CONHCH(3-NH_2-C_6H_4)$_2$	p-SPh	
I-767	CONHCH(3-NH_2-C_6H_4)$_2$	p-SPh	
I-768	CONHCH(3-NH_2-C_6H_4)$_2$	p-SPh	OPh-4-CH_2COOH

Table 73

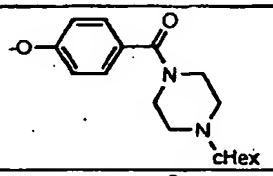
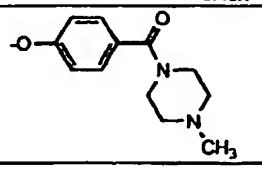
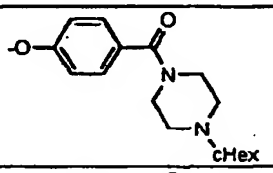
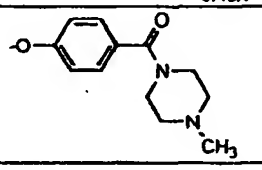
I-769	CONHCH(3-NH_2-C_6H_4)$_2$	p-SPh	OPh-4-CH_2CH=CHCOOH
I-770	CONHCH(3-NH_2-C_6H_4)$_2$	p-SPh	SPh-3-CH_2COOH
I-771	CONHCH(3-NH_2-C_6H_4)$_2$	p-Et	
I-772	CONHCH(3-NH_2-C_6H_4)$_2$	p-Et	
I-773	CONHCH(3-NH_2-C_6H_4)$_2$	p-Et	OPh-4-CH_2COOH
I-774	CONHCH(3-NH_2-C_6H_4)$_2$	p-Et	OPh-4-CH_2CH=CHCOOH
I-775	CONHCH(3-NH_2-C_6H_4)$_2$	p-Et	SPh-3-CH_2COOH
I-776	CONHCH(3-NH_2-C_6H_4)$_2$	p-Ph	
I-777	CONHCH(3-NH_2-C_6H_4)$_2$	p-Ph	
I-778	CONHCH(3-NH_2-C_6H_4)$_2$	p-Ph	OPh-4-CH_2COOH
I-779	CONHCH(3-NH_2-C_6H_4)$_2$	p-Ph	OPh-4-CH_2CH=CHCOOH
I-780	CONHCH(3-NH_2-C_6H_4)$_2$	p-Ph	SPh-3-CH_2COOH

Table 74

No.	ν cm-1		H¹
I-1	$CHCl_3$ 1792,1679	$CDCl_3$	2.94-3.20(m,2H),3.40-3.49(m,1H),5.16(d,J=3.2Hz,1H), 7.18-8.90(m,15H)
I-2	$CHCl_3$ 1789,1673	$CDCl_3$	2.93-3.18(m,2H),3.35-3.44(m,1H),5.15(d,J=3.4Hz,1H), 6.05(s,2H),6.83-7.54(m,13H)
I-3	$CHCl_3$ 1792,1675	$CDCl_3$	2.94-3.19(m,2H),3.39-3.48(m,1H),3.82(s,3H),5.15(d, J=3.5Hz,1H),7.20-7.50(m,14H)
I-4	$CHCl_3$ 1796,1728	$CDCl_3$	2.94(t,J=7.1Hz,2H),3.24-3.33(m,1H),4.97(d,J=3.2Hz,1H), 7.07-7.93(m,15H)
I-5	$CHCl_3$ 1768	$CDCl_3$	2.95-3.20(m,2H),3.40-3.50(m,1H),5.03(d,J=2.7Hz,1H), 7.06-7.51(m,15H),8.40(s,1H)
I-6	$CHCl_3$ 1767	$CDCl_3$	2.96-3.20(m,2H),3.39-3.48(m,1H),3.79(s,1H),5.02(d, J=2.6Hz,1H),6.84-7.55(m,14H),8.27(S,1H)
I-7	$CHCl_3$ 1769	$CDCl_3$	2.96-3.20(m,2H),3.40-3.51(m,1H),5.03(d,J=2.7Hz,1H), 7.16-7.49(m,14H),8.41(s,1H)
I-8	$CHCl_3$ 1769	$CDCl_3$	2.97-3.20(m,2H),3.42-3.52(m,1H),5.03(d,J=2.7Hz,1H), 7.15-7.50(m,14H),8.42(s,1H)
I-9	$CHCl_3$ 1770	$CDCl_3$	1.39(t,J=10.7Hz,3H),2.95-3.24(m,2H),3.43-3.55(m,1H), 4.36(q,J=10.7Hz,2H),5.50(d,J=2.8Hz,1H),7.15-8.04(m, 14H),8.59(s,1H)
I-10	$CHCl_3$ 1768	$CDCl_3$	2.34(s,3H),2.95-3.20(m,2H),3.38-3.5(m,1H),5.02(d,J=2.7 Hz,1H),6.90-7.50(m,15H),8.35(s,1H)
I-11	$CHCl_3$ 1769	$CDCl_3$	1.40(t,J=7.2Hz,3H),2.97-3.22(m,2H),3.42-3.52(m,1H), 4.38(q,J=7.2Hz,2H),5.04(d,J=2.7Hz,1H),7.15-8.10(m, 14H),8.50(s,1H)
I-12	$CHCl_3$ 1771	$CDCl_3$	2.95-3.22(m,2H),3.38-3.47(m,1H),3.90(s,3H),5.03(d, J=2.7Hz,1H),6.85-8.26(m,14H),9.01(s,1H)
I-13	$CHCl_3$ 1768,1707, 1536,1317	$CDCl_3$	2.92-3.18(m,2H),3.33-3.42(m,1H),4.46-4.51(m,2H),4.96 (d,J=2.6Hz,1H),6.81(br,1H),7.15-7.45(m,15H)
I-14	$CHCl_3$ 1769	$CDCl_3$	1.51,1.59(d,J=6.0Hz,3H),2.90-3.18(m,2H),3.29-3.42(m, 1H),4.90,4.93(d,J=2.6Hz,1H),5.00-5.16(m,1H),6.70-6.80 (m,1H),7.10-7.50(m,15H)
I-15	$CHCl_3$	$CDCl_3$	0.86-1.00(m,3H),1.76-1.95(m,2H),2.90-3.20(m,2H),3.30-3.42(m,1H),4.77-4.88(m,1H),4.89,4.93(d,J=2.6Hz,1H), 6.77-6.84(m,1H),7.12-7.48(m,15H)
I-16	$CHCl_3$ 1773	$CDCl_3$	2.90-3.20(m,2H),3.35-3.45(m,1H),3.42,3.54(s,3H),4.95, 4.98(d,J=2.5Hz,1H),6.05-6.10(m,1H),7.00-7.10(m,1H), 7.15-7.55(m,15H)
I-17	$CHCl_3$ 1769	$CDCl_3$	2.95-3.20(m,2H),3.34-3.48(m,1H),4.95(d,J=2.6Hz,1H), 6.21(d,J=8.6Hz,1H),7.20-7.45(m,21H)
I-18	$CHCl_3$ 1768	$CDCl_3$	0.89,0.95(t,J=6.0Hz,3H),1.75-1.95(m,2H),2.90-3.20(m, 2H),3.30-3.42(m,1H),4.77-4.88(m,1H),4.89,4.93(d, J=2.4Hz,1H),6.70-6.85(m,1H),7.17-7.50(m,15H)
I-19	$CHCl_3$ 1768	$CDCl_3$	0.86,0.94(t,J=6.5Hz,3H),1.72-1.90(m,2H),2.98-3.18(m, 2H),3.30-3.45(m,1H),4.70-4.84(m,1H),4.90,4.92(d, J=2.5Hz,1H),6.78(d,J=7.1Hz,1H),7.12-7.50(m,14H)
I-20	$CHCl_3$ 1768	$CDCl_3$	0.89,0.95(t,J=6.5Hz,3H),1.75-1.92(m,2H),2.90-3.20(m,2H), 3.30-3.42(m,1H),3.79,3.82(S,3H),4.70-4.84(m,1H),4.90, 4.93(d,J=2.6Hz,1H),6.80(br,1H),6.81-7.45(m,14H)
I-21	$CHCl_3$ 1767	$CDCl_3$	0.88,0.93(t,J=6.5Hz,3H),1.70-1.90(m,2H),2.90-3.18(m,2H), 3.30-3.42(m,1H),4.66-4.78(m,1H),4.90,4.92(d,J=2.6Hz,1H), 5.94,5.96(s,2H),6.70(br,1H),6.70-7.45(m,14H)

Table 75

No.	ν cm-1		H^1
I-22	$CHCl_3$ 1793	$CDCl_3$	2.88-3.12(m,2H),3.36-3.45(m,1H),3.79(s,3H), 5.14(d,J=2.8Hz,1H),6.81-7.96(m,14H)
I-23	$CHCl_3$ 1792	$CDCl_3$	2.92-3.20(m,2H),3.48-3.58(m,1H),3.78(s,3H), 5.19(d,J=3.4Hz,1H),6.85-7.87(m,14H)
I-24	$CHCl_3$ 1795	$CDCl_3$	2.92-3.18(m,2H),3.38-3.48(m,1H),3.77(s,3H), 5.16(d,J=2.2Hz,1H),6.75-7.87(m,14H)
I-25	$CHCl_3$ 1794	$CDCl_3$	2.90-3.18(m,2H),3.36-3.48(m,1H), 5.14(d,J=3.5Hz,1H),7.05-7.88(m,14H)
I-26	$CHCl_3$ 1793	$CDCl_3$	2.32(s,3H),2.90-3.17(m,2H),3.39-3.49(m,1H), 5.15(d,J=3.4Hz,1H),7.02-7.87(m,14H)
I-27	$CHCl_3$ 1794	$CDCl_3$	2.16-2.28(m,6H),2.88-3.25(m,2H),3.41-3.50(m,1H), 5.14(d,J=3.4Hz,1H),6.90-7.90(m,13H)
I-28	$CHCl_3$ 1794	$CDCl_3$	2.85-3.15(m,2H),3.33-3.45(m,1H), 5.14(d,J=3.2Hz,1H),5.94(s,2H),6.60-7.78(m,13H)
I-29	$CHCl_3$ 1791	$CDCl_3$	2.04-2.33(m,12H),2.70-3.60(m,4H),5.39,5.44(s,1H), 6.60-7.80(m,16H)
I-30	$CHCl_3$ 1793	$CDCl_3$	2.78-3.65(m,2H),3.43,3.89(s,6H),5.3(s,1H), 6.70-7.76(m,18H)
I-31	$CHCl_3$ 1787,1695, 1673	$CDCl_3$	2.96-3.28(m,2H),3.50-3.68(m,2H), 3.80-3.90(m,1H),7.20-8.18(m,10H)
I-32	$CHCl_3$ 1781	$CDCl_3$	0.80-1.00(m,3H),1.70-1.90(m,2H),2.30-3.10(m,2H), 3.60-4.15(m,1H),4.35-4.41,4.79-4.85(m,1H), 4.60-4.80(m,1H),6.60-6.80(m,1H),7.05-7.60(m,15H)
I-33	$CHCl_3$ 1788	$CDCl_3$	0.79,0.87(t,J=14.6Hz,3H),1.74(q,J=14.6Hz,2H), 3.10-3.19(m,2H),4.10-4.20(m,1H),4.35-4.55(m,1H), 4.76,4.79(d,J=2.5Hz,1H),5.93,5.97(s,2H),6.40-6.56 (m,1H),7.10-7.90(m,13H)

Table 76

No.	ν cm-1		H^1
I-34	$CHCl_3$ 1767	$CDCl_3$	1.55(d,J=7.0Hz,3H),2.90-3.18(m,2H), 3.34-3.43(m,1H),4.91(d,J=2.6Hz,1H), 4.98-5.16(m,1H),6.79(d,J=4.0Hz,1H), 7.10-7.50(m,15H)
I-35	$CHCl_3$ 1768	$CDCl_3$	1.51(d,J=7.0Hz,3H),2.93-3.18(m,2H), 3.25-3.38(m,1H),4.94(d,J=2.6Hz,1H), 5.01-5.15(m,1H),6.76(d,J=8.2Hz,1H), 7.10-7.50(m,15H)
I-36	$CHCl_3$ 1782	$CDCl_3$	1.50-1.57(m,3H),2.11,2.12(s,3H), 3.11-3.16(m,2H),3.35-3.48(m,1H), 4.10-5.08(m,1H),6.07,6.08(d,J=2.5Hz,1H), 6.66-6.70(m,1H),7.15-7.40(m,10H)
I-37	$CHCl_3$ 1781	DMSO-d_6	1.44(d,J=6.9Hz,3H),3.13(d,J=7.8Hz,2H), 3.73(m,1H),4.89(m,1H),6.06(s,1H), 6.89(d,J=8.8Hz,2H),7.20-7.40(m,11H), 7.77(d,J=8.8Hz,2H),12.80(br,1H)
I-38	$CHCl_3$ 1780	$CDCl_3$	1.54(d,J=7.0Hz,3H),1.60-2.80(m,8H), 5.00(m,1H),5.65(d,J=1.2Hz,1H), 6.80-6.95(m,3H),7.15-7.40(m,12H)
I-39	$CHCl_3$ 1779	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.31(s,3H), 2.20-2.50(br,4H),2.94-3.27(m,2H), 3.40-3.80(br,2H),3.65(m,1H),5.02(m,1H), 5.65(d,J=1.4Hz,1H),6.85(d,J=7.8Hz,1H), 6.91(d,J=8.8Hz,2H),7.15-7.40(m,12H)
I-40	$CHCl_3$ 1780	$CDCl_3$	1.54(d,J=7.0Hz,3H),1.70-2.15(m,3H), 2.44(m,1H),2.94-3.28(m,2H),3.50(m,2H), 3.66(m,1H),4.77(m,1H),5.01(m,1H), 5.67(d,J=1.4Hz,1H),6.84(d,J=8.2Hz,1H), 6.91(d,J=8.8Hz,2H),7.15-7.45(m,12H)
I-41	$CHCl_3$ 1779	$CDCl_3$	0.80-2.20(m,7H),1.54(d,J=7.0Hz,3H), 2.93-3.27(m,2H),3.41(m,2H),3.64(m,1H), 5.02(m,1H),5.65(d,J=1.2Hz,1H), 6.86(m,3H),7.15-7.40(m,12H)
I-42	$CHCl_3$ 1777	$CDCl_3$	1.52(d,J=7.0Hz,3H),2.95-3.27(m,2H), 3.64(m,1H),5.00(m,1H),5.32(s,2H), 5.71(d,J=1.4Hz,1H),6.81(d,J=8.0Hz,1H), 6.90(d,J=8.8Hz,2H),7.15-7.45(m,15H), 7.92(d,J=8.8Hz,2H)

Table 77

No	ν cm-1		H¹
I-43	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=6.9Hz,3H),2.95-3.27(m,2H),3.40-3.80(m,9H), 5.01(m,1H),5.65(d,J=1.4Hz,1H),6.83(d,J=8.0Hz,1H), 6.91(d,J=8.8Hz,2H),7.10-7.40(m,12H)
I-44	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=6.9Hz,3H),2.94-3.27(m,2H),3.64(m,1H), 4.06(m,2H),5.00(m,1H),5.15-5.29(m,2H), 5.68(d,J=1.4Hz,1H),5.60-6.05(m,2H), 6.83(d,J=8.2Hz,1H),6.91(d,J=8.8Hz,2H), 7.15-7.40(m,10H),7.62(d,J=8.8Hz,2H)
I-45	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.93-3.27(m,2H),3.64(m,1H), 4.61(d,J=5.5Hz,2H),4.99(m,1H),5.66(d,J=1.4Hz,1H), 6.26(br,1H),6.81(d,J=8.4Hz,1H),6.89(d,J=8.8Hz,2H), 7.15-7.40(m,15H),7.63(d,J=8.8Hz,2H)
I-46	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.95-3.28(m,2H),3.67(m,1H), 5.05(m,1H),5.67(d,J=1.4Hz,1H),6.85(d,J=8.0Hz,1H), 6.93(d,J=8.8Hz,2H),7.10-7.40(m,13H), 7.59(d,J=8.4Hz,2H),7.68(d,J=8.8Hz,2H),7.77(br,1H)
I-47	$CHCl_3$ 1781	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.33(s,6H),2.69(t,J=5.7Hz,2H), 2.96-3.28m,2H),3.65(m,1H),5.01(m,1H), 5.71(d,J=1.4Hz,1H),6.81(d,J=8.3Hz,1H), 6.90(d,J=8.8Hz,2H),7.15-7.40(m,10H), 7.89(d,J=8.8Hz,2H)
I-48	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.90-3.18(m,2H),3.34-3.43(m,1H), 4.91(d,J=2.6Hz,1H),4.98-5.16(m,1H),6.79(d,J=4.0Hz, 1H),7.10-7.50(m,15H)
I-49	$CHCl_3$ 1777	DMSO-d_6	1.44(d,J=7.0Hz,3H),3.12(d,J=7.7Hz,2H),3.47(s,2H), 3.68(m,1H),4.89(m,1H),5.87(d,J=1.3Hz,1H), 6.76(d,J=8.6Hz,2H),7.08(d,J=8.8Hz,2H), 7.20-7.40(m,11H),12.30(br,1H)
I-50	$CHCl_3$ 1778	$CDCl_3$	1.54(d,J=6.9Hz,3H),2.15-2.40(m,4H),2.26(s,3H), 2.93-3.25(m,2H),3.42(m,2H),3.63(m,3H),5.03(m,1H), 5.61(d,J=1.4Hz,1H),6.84(m,3H),7.06(d,J=8.6Hz,2H), 7.15-7.40(m,10H)
I-51	$CHCl_3$	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.40(s,6H),2.61(t,J=5.7Hz,2H), 2.93-3.25(m,2H),3.64(m,1H),4.21(t,J=5.7Hz,2H), 5.01(m,1H),5.61(d,J=1.3Hz,1H),6.84(m,3H), 7.11(d,J=8.8Hz,2H),7.15-7.45(m,10H)
I-52	$CHCl_3$ 1780	DMSO-d_6	1.43(d,J=7.0Hz,3H),3.12(d,J=7.8Hz,2H),3.71(m,1H), 4.89(m,1H),6.02(d,J=1.3Hz,1H),6.63(d,J=16.0Hz,1H), 6.89(d,J=8.7Hz,2H),7.20-7.45(m,11H), 7.51(d,J=16.0Hz,1H),7.54(d,J=8.7Hz,2H)
I-53	$CHCl_3$ 1780	$CDCl_3$	1.53(d,J=7.0Hz,3H),1.70-2.60(m,4H),2.95-3.27(m,2H), 3.55-3.80(m,3H),4.75(m,1H),5.01(m,1H),5.35(br,1H), 5.67(d,J=1.4Hz,1H),6.61(d,J=15.4Hz,1H),6.84(d, J=7.9Hz,1H),6.91(d,J=8.6Hz,2H),7.15-7.45(m,12H), 7.66(d,J=15.4Hz,1H)

Table 78

No.	ν cm-1		H^1
I-54	$CHCl_3$ 1779	$CDCl_3$	1.53(d,J=6.9Hz,3H),2.32(s,3H),2.3(m,4H), 2.95-3.26(m,2H),3.60-3.80(m,5H),5.01(m,1H), 5.66(d,J=1.4Hz,1H),6.73(d,J=15.4Hz,1H),6.83 (d,J=8.0Hz,1H),6.89(d,J=8.7Hz,2H),7.10-7.40 (m,12H),7.58(d,J=15.4Hz,1H)
I-55	$CHCl_3$ 1780	DMSO-d_6	1.44(d,J=6.9Hz,3H),3.11(d,J=7.9Hz,d), 3.73(m,1H),4.89(m,1H),5.98(d,J=1.4Hz,d), 7.05-7.40(m,13H),7.60(m,2H),13.05(br,1H)
I-56	$CHCl_3$ 1779	$CDCl_3$	1.53(d,J=7.0Hz,3H),2.31(s,3H), 2.20-2.50(m,4H),2.93-3.25(m,2H), 3.30-3.50(br,2H),4.99(m,1H), 5.64(d,J=1.4Hz,1H),6.84(d,J=7.7Hz,1H), 6.94-7.10(m,3H),7.15-7.40(m,10H)
I-57	$CHCl_3$ 1772	DMSO-d_6	1.44(d,J=7.0Hz,3H),3.08(d,J=8.0Hz,d), 3.58(m,1H),4.90(m,1H),5.39(d,J=2.8Hz,d), 7.05-7.40(m,11H),7.46(d,J=8.4Hz,2H), 7.83(d,J=8.4Hz,2H)
I-58	$CHCl_3$ 1771	$CDCl_3$	1.54(d,J=6.9Hz,3H),2.32(s,6H), 2.20-2.50(br,4H),2.92-3.20(m,2H), 3.30-3.90(br,4H),3.46(m,1H), 4.93(d,J=2.6Hz,1H),5.04(m,1H), 6.81(d,J=8.4Hz,1H),7.10-7.40(m,12H) 7.48(d,J=8.3Hz,2H)
I-59	$CHCl_3$ 1773	$CDCl_3$	1.55(d,J=7.0Hz,3H),2.81-3.17(m,2H), 3.47-3.56(m,1H),4.82(d,J=13.1Hz,1H), 4.99(d,J=13.1Hz,d),4.94-5.10(m,1H), 5.15(d,1H,J=1.8Hz),6.94(d,J=8.2Hz,1H), 7.10-7.40(m,12H),8.01(d,J=8.2Hz,2H)
I-60	$CHCl_3$ 1772	$CDCl_3$	1.54(d,J=7.0Hz,3H),2.20-2.60(m,4H),2.32(s,3H), 2.81-3.16(m,2H),3.30-3.90(m,5H), 4.75(d,J=12.6Hz,1H),4.94-5.10(m,1H), 5.15(d,J=1.7Hz,1H),6.94(d,J=7.9Hz,1H), 7.10-7.40(m,14H)
I-61	$CHCl_3$ 1780	DMSO-d_6	1.44(d,J=7.0Hz,3H),2.80-3.15(m,2H), 4.08(m,1H),4.86(m,1H),6.27(d,J=4.5Hz,d), 7.10-7.40(m,13H),7.84(d,J=8.6Hz,2H), 12.60-12.90(br,1H)
I-62	$CHCl_3$ 1778	$CDCl_3$	1.54(d,J=6.9Hz,3H),2.31(s,3H),2.39(br,4H), 3.16-3.25(m,2H),3.30-3.90(br,4H), 3.80-3.91(m,1H),5.05(m,1H),6.06(d,J=4.5Hz,1H), 6.89(d,J=7.8Hz,1H),7.11-7.40(m,14H)

Table 79

No.		H^1
I-63	$CDCl_3$	1.50-1.56(m,3H),2.87-3.20(m,2H),3.30-3.50(m,1H), 3.69,3.75(s,3H),4.48(m,1H),5.00-5.20(m,1H), 6.78-7.50(m,15H)
I-64	$CDCl_3$	1.51-1.57(m,3H),2.87-3.18(m,2H),3.30-3.45(m,1H), 4.89-4.93(m,1H),5.00-5.18(m,1H),6.73-6.80(m,1H), 7.15-7.50(m,14H)
I-65	$CDCl_3$	1.50-1.56(m,3H),2.80-3.10(m,2H),3.25-3.40(m,1H), 4.91(m,1H),5.00-5.18(m,1H),5.94(m,2H),6.61-7.55(m,14H)

Table 80

No.		H^1
I-66	$CDCl_3$	1.54(d, J=6.9Hz,3H),3.10-3.33(m,2H),3.82-3.93(m,1H), 6.13(d,J=4.6Hz,1H),6.85(d,J=8.0Hz,1H),7.08(s,1H), 7.14-7.46(m,22H),8.07(d,J=9.0Hz,2H)
I-67	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.18-3.28(m,2H),3.40-3.80(m,8H), 3.80-3.92(m,1H),4.96-5.12(m,1H),6.06(d,J=4.6Hz,1H), 6.88(d,J=8.0Hz,1H),7.10-7.40(m,14H)
I-68	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.10-3.33(m,2H),3.80-3.92(m,1H), 4.67(d,J=5.8Hz,1H),4.96-5.11(m,1H),6.09(d,J=4.7Hz,1H), 6.34-6.44(m,1H),6.86(d,J=8.2Hz,1H),7.00-7.47(m,16H), 7.72(d,J=8.8Hz,2H)
I-69	$CDCl_3$	1.54(d, J=6.8Hz,3H),3.00-3.32(m,2H),3.81-3.92(m,1H), 4.96-5.11(m,1H),5.33(s,2H),6.11(d,J=4.7Hz,1H), 6.84(d,J=7.8Hz,1H),7.10-7.47(m,17H),8.00(d,J=8.8Hz,2H)
I-70	$CDCl_3$	1.00-1.20(m,3H),1.54(d, J=7.0Hz,3H),3.05-3.60(m,4H), 3.79-3.90(m,1H),4.45-4.80(m,2H),4.96-5.12(m,1H), 6.04(d,J=4.6Hz,1H),6.87(d,J=8.3Hz,1H),7.10-7.47(m,19H)
I-71	$CDCl_3$	1.54(d, J=6.9Hz,3H),1.64(d,J=6.6Hz,3H),3.09-3.30(m,2H), 3.80-3.92(m,1H),4.97-5.11(m,1H),6.02-6.14(m,2H), 6.85(d,J=8.4Hz,1H),7.10-7.45(m,17H),8.00(d,J=9.0Hz,2H)
I-72	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.10-3.43(m,2H),3.81-3.92(m,1H), 4.97-5.11(m,1H),5.22(s,2H),5.97(s,2H),6.11(d,J=4.6Hz,1H), 6.78-6.95(m,4H),7.08-7.40(m,12H),7.97(d,J=9.0Hz,2H)
I-73	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.12-3.33(m,2H),3.81-3.94(m,1H), 4.96-5.11(m,1H),6.11(d,J=4.6Hz,1H),6.28(d,J=3.7Hz,1H), 6.84-6.95(m,4H),7.10-7.40(m,14H),7.75(d,J=8.9Hz,2H), 7.83(d,J=3.7Hz,1H)
I-74	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.16-3.30(m,2H),3.89-3.91(m,1H), 5.00-5.26(m,4H),6.08(d,J=4.6Hz,1H),6.45(d,J=7.9Hz,1H), 6.86(d,J=7.7Hz,4H),6.98-7.08(m,2H),7.13(d,J=8.8Hz,2H), 7.15-7.40(m,18H),7.63(d,J=8.8Hz,2H)
I-75	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.10-3.32(m,2H),3.83-3.94(m,1H), 4.96-5.12(m,1H),5.35(s,2H),6.14(d,J=4.6Hz,1H), 6.85(d,J=8.0Hz,1H),7.15-7.45(m,14H),8.02(d,J=9.0Hz,2H), 8.62(d,J=6.1Hz,2H)
I-76	$CDCl_3$	1.54(d, J=6.9Hz,3H),2.25-2.50(m,4H),3.19-3.25(m,2H), 3.43(s,2H),3.20-3.90(m,5H),4.95-5.12(m,1H),5.94(s,2H), 6.05(d,J=4.6Hz,1H),6.74(s,1H),6.88(d,J=8.0Hz,1H), 7.10-7.45(m,16H)

Table 81

No.		H^1
I-77	$CDCl_3$	1.54(d, J=7.0Hz,3H),3.08-3.40(m,4H),3.80-3.91(m,1H), 3.91-4.40(m,1H),4.90-5.10(m,2H),6.07(d,J=4.7Hz,1H), 6.55(d,J=3.5Hz,1H),6.88(d,J=8.0Hz,1H),7.08(d,J=8.8Hz,2H), 7.15-7.40(m,15H),7.58(d,J=8.8Hz,2H)
I-78	$CDCl_3$	1.53(d, J=7.0Hz,3H),3.10-3.31(m,2H),3.81-3.92(m,1H), 4.96-5.11(m,1H),5.40(s,2H),6.12(d,J=4.4Hz,1H), 6.84(d,J=7.8Hz,1H),7.02-7.52(m,16H),7.99(d,J=9.2Hz,2H)
I-79	$CDCl_3$ (300MHz)	1.54(d, J=6.9Hz,3H),3.13-3.29(m,2H),3.83-3.91(m,1H), 4.98-5.08(m,1H),5.32(s,2H),6.12(d,J=4.8Hz,1H), 6.85(d,J=8.1Hz,1H),6.98-7.40(m,16H),8.00(d,J=9.0Hz,2H)
I-80	DMSO-d_6	1.45(d, J=6.9Hz,3H),2.96-3.13(m,2H),4.03-4.10(m,1H), 4.85-4.96(m,1H),6.27(d,J=4.5Hz,1H),7.16-7.40(m,13H), 7.86(d,J=9.3Hz,2H),12.75(brs,1H)
I-81	$CDCl_3$	1.54(d,J=7.0Hz,3H),2.32(s,3H),2.30-2.50(m,4H), 3.20-3.27(m,2H),3.30-3.88(m,5H),4.96-5.11(m,1H), 6.02(d,J=4.6Hz,1H),6.92(d,J=8.0Hz,1H),7.10-7.40(m,14H)
I-82	$CDCl_3$	1.10-1.35(m,4H),1.54(d, J=6.9Hz,3H),1.60-1.90(m,6H), 2.20-2.40(m,1H),2.40-2.70(m,4H),3.20-3.30(m,2H), 3.30-3.80(m,5H),4.96-5.12(m,1H),6.01(d,J=4.7Hz,1H), 6.91(d,J=8.2Hz,1H),7.10-7.40(m,14H)
I-83	$CDCl_3$	1.55(d,J=7.0Hz,3H),1.40-2.10(m,11H),2.40-3.10(m,8H), 3.20-3.30(m,2H),3.75-3.90(m,1H),4.95-5.12(m,1H), 6.02(d,J=4.5Hz,1H),6.91(d,J=8.0Hz,1H),7.10-7.40(m,14H)
I-84	$CDCl_3$	1.53(d, J=7.0Hz,3H),3.12-3.44(m,2H),3.78-3.89(m,1H), 5.33(s,2H),6.07(d,J=4.6Hz,1H),6.88(d,J=8.3Hz,1H), 7.10-7.50(m,17H),8.01(d,J=8.9Hz,2H)
I-85	$CDCl_3$	1.52(d, J=7.0Hz,3H),3.09-3.32(m,2H),3.86-3.97(m,1H), 5.02-5.17(m,1H),5.43(d,J=5.6Hz,1H),6.88(d,J=8.3Hz,1H), 7.20-7.45(m,13H),7.52-7.64(m,2H)

Table 82

No.		H^1
I-86	DMSO-d_6	1.45(d, J=7.0Hz,3H),3.15(d,J=8.0Hz,2H),3.67-3.76(m,1H), 4.76-4.94(m,1H),6.07(d,J=1.3Hz,1H),6.85(d,J=8.8Hz,2H), 7.20-7.40(m,11H),7.74(d,J=8.8Hz,2H),12.80(brs,1H)
I-87	$CDCl_3$	1.54(d, J=7.0Hz,3H),2.32(s,3H),2.20-2.55(m,4H), 2.97-3.90(m,7H),4.96-5.11(m,1H),5.70(d,J=1.2Hz,1H), 6.83(d,J=7.8Hz,1H),6.88(d,J=8.6Hz,2H),7.18-7.41(m,12H)
I-88	DMSO-d_6	1.44(d, J=6.9Hz,3H),3.13(d,J=7.8Hz,2H),3.69-3.77(m,1H), 4.81-4.97(m,1H),6.06(d,J=1.2Hz,1H),6.89(d,J=8.8Hz,2H), 7.15-7.45(m,11H),7.77(d,J=8.8Hz,2H),12.73(brs,1H)
I-89	$CDCl_3$	1.54(d, J=7.0Hz,3H),2.31(s,3H),2.25-2.50(m,4H), 2.94-3.90(m,7H),4.94-5.09(m,1H),5.65(d,J=1.4Hz,1H), 6.85(d,J=7.8Hz,1H),6.91(d,J=8.8Hz,2H),7.15-7.40(m,12H)

Table 83

No.		H^1
I-90	DMSO-d_6	1.45(d, J=7.0Hz,3H),2.98-3.15(m,2H),4.00-4.12(m,1H), 4.85-5.00(m,1H),6.27(d,J=4.7Hz,1H),7.10-7.48(m,13H), 7.86(d,J=8.6Hz,2H),12.70(brs,1H)
I-91	$CDCl_3$	1.54(d, J=6.8Hz,3H),2.32(s,3H),2.25-2.50(m,4H), 3.15-3.90(m,7H),4.95-5.14(m,1H),6.02(d,J=4.8Hz,1H), 6.92(d,J=8.2Hz,1H),7.10-7.40(m,14H)

Table 84

No.		H^1
I-92	$CDCl_3$	1.53(d, J=6.9Hz,3H),2.94-3.25(m,2H),3.59-3.68(m,1H), 4.95-5.10(m,1H),5.65(d,J=1.4Hz,1H),6.80-7.05(m,4H), 7.15-7.40(m,12H)
I-93	$CDCl_3$	1.54(d, J=7.0Hz,3H),2.88-3.26(m,2H),3.59-3.68(m,1H), 4.94-5.10(m,1H),5.52(d,J=1.4Hz,1H),6.76-7.00(m,5H), 7.15-7.40(m,10H)
I-94	$CDCl_3$	1.53(d, J=7.0Hz,3H),2.97-3.28(m,2H),3.57-3.67(m,1H), 4.96-5.12(m,1H),5.69(d,J=1.4Hz,1H),6.75-7.05(m,4H), 7.15-7.40(m,12H)
I-95	$CDCl_3$	1.51-1.59(m,3H),2.94-3.31(m,2H),3.59-3.70(m,1H), 4.94-5.10(m,1H),5.50-6.00(m,3H),6.75-7.00(m,3H), 7.15-7.40(m,10H),7.60-7.75(m,2H)
I-96	$CDCl_3$	1.55(d,J=7.0Hz,3H),2.88-3.19(m,2H),3.36-3.45(m,1H), 4.87(d,J=2.8Hz,1H),4.96-5.14(m,1H),6.79(d,J=8.9Hz,1H), 7.16-7.40(m,14H)
I-97	$CDCl_3$	1.55(d,J=7.0Hz,3H),2.87-3.18(m,2H),3.33-3.43(m,1H), 4.85(d,J=2.7Hz,1H),4.96-5.14(m,1H),6.79(d,J=8.2Hz,1H), 6.93-7.05(m,2H),7.15-7.45(m,12H)
I-98	$CDCl_3$	1.55(d,J=6.9Hz,3H),2.87-3.15(m,2H),3.29-3.38(m,1H), 3.80(s,3H),4.82(d,J=2.6Hz,1H),4.99-5.11(m,1H), 6.70-6.87(m,3H),7.10-7.40(m,12H)
I-99	$CDCl_3$	1.52(d,J=7.0Hz,3H),2.92-3.20(m,2H),3.28-3.37(m,1H), 4.88(d,J=2.6Hz,1H),4.99-5.14(m,1H),6.76(d,J=8.0Hz,1H), 6.83-6.95(m,2H),7.15-7.45(m,12H)
I-100	$CDCl_3$	1.51(d,J=6.9Hz,3H),2.92-3.17(m,2H),3.25-3.34(m,1H), 3.37(s,3H),4.85(d,J=2.5Hz,1H),5.01-5.16(m,1H), 6.65-6.80(m,3H),7.15-7.45(m,12H)
I-101	$CDCl_3$	1.48-1.56(m,3H),2.10-2.20(m,3H),2.89-3.19(m,2H), 3.28-3.42(m,1H),4.84-4.89(m,1H),4.90-5.24(m,1H), 6.74-6.81(m,1H),7.10-7.50(m,15H)

Table 85

No.		H^1
I-102	DMSO-d_6	1.45(d, J=7.0Hz,3H),3.09(d,J=8.2Hz,2H),3.58-3.66(m,1H), 3.70(s,3H),4.77-4.92(m,1H),6.00(d,J=1.2Hz,1H), 6.85-6.98(m,4H),7.20-7.40(m,8H),7.76(d,J=8.9Hz,2H), 12.76(brs,1H)
I-103	$CDCl_3$	1.53(d, J=7.0Hz,3H),2.93-3.27(m,2H),3.59-3.67(m,1H), 3.66(s,3H),4.95-5.10(m,1H),5.79(d,J=1.3Hz,1H), 6.78-8.05(m,25H)
I-104	$CDCl_3$	1.54(d, J=7.0Hz,3H),2.32(s,3H)2.25-2.50(m,4H), 2.95-3.28(m,2H),3.30-3.80(m,5H),3.67(s,3H), 4.95-5.10(m,1H),5.72(d,J=1.2Hz,1H),6.79-6.94(m,5H), 7.10-7.40(m,9H)
I-105	$CDCl_3$	1.53(d, J=6.9Hz,3H),2.93-3.29(m,2H),3.68(s,3H), 3.60-3.70(m,1H),4.94-5.05(m,1H),5.34(s,2H), 5.80(d,J=1.2Hz,1H),6.79-7.00(m,5H),7.14-7.40(m,10H), 7.95(d,J=9.0Hz,2H),8.63(d,J=6.0Hz,2H)
I-106	$CDCl_3$	1.52(d, J=7.0Hz,3H),2.92-3.27(m,2H),3.58-3.70(m,1H), 3.67(s,3H),4.93-5.10(m,1H),5.34(s,2H),5.78(d,J=1.3Hz,1H), 6.75-7.00(m,5H),7.12-7.50(m,13H),7.92(d,J=9.0Hz,2H)
I-107	$CDCl_3$	1.53(d, J=6.9Hz,3H),2.92-3.28(m,2H),3.68(s,3H), 3.40-4.00(m,9H),4.96-5.11(m,1H),5.74(d,J=1.3Hz,1H), 6.55(t,J=4.8Hz,1H),6.79-6.96(m,5H),7.10-7.40(m,9H), 8.33(d,J=4.8Hz,2H)
I-108	$CDCl_3$	1.10-1.35(m,4H),1.53(d, J=6.9Hz,3H),1.60-1.90(m,6H), 2.20-2.40(m,1H),2.40-2.65(m,4H),2.91-3.26(m,2H), 3.30-3.90(m,5H),3.66(s,3H),4.95-5.10(m,1H), 5.72(d,J=1.4Hz,1H),6.77-6.95(m,5H),7.10-7.40(m,9H)
I-109	DMSO-d_6	1.43(d, J=6.8Hz,3H),2.95-3.20(m,2H),3.59-3.74(m,1H), 3.69(s,3H),4.80-4.96(m,1H),5.99(s,1H),6.87-7.00(m,4H), 7.15-7.40(m,8H),7.79(d,J=8.8Hz,2H),12.75(brs,1H)
I-110	$CDCl_3$	1.53(d, J=6.8Hz,3H),2.96-3.29(m,2H),3.57-3.63(m,1H), 3.69(s,3H),4.95-5.10(m,1H),5.83(d,J=1.2Hz,1H), 6.75-8.00(m,5H)
I-111	$CDCl_3$	1.54(d, J=6.9Hz,3H),2.31(s,3H)2.25-2.50(m,4H), 2.95-3.28(m,2H),3.30-3.75(m,5H),3.70(s,3H), 4.95-5.04(m,1H),5.77(d,J=1.3Hz,1H),6.81-6.94(m,5H), 7.15-7.40(m,9H)

Table 86

No.		H^1
I-112	$CDCl_3$	1.53(d, J=7.0Hz,3H),2.95-3.30(m,2H),3.56-3.63(m,1H), 3.69(s,3H),4.95-5.10(m,1H),5.32(s,2H),5.82(d,J=1.3Hz,1H), 6.85-6.96(m,5H),7.10-7.48(m,12H),7.95(d,J=9.0Hz,2H)
I-113	$CDCl_3$	0.92(t, J=7.4Hz,3H),1.75-1.90(m,2H),2.93-3.27(m,2H), 3.60-3.69(m,1H),3.66(s,3H),4.71-4.83(m,1H), 5.79(d,J=1.3Hz,1H),6.77-6.95(m,5H),7.10-7.40(m,8H), 7.91(d,J=8.8Hz,2H)
I-114	$CDCl_3$	0.91(t, J=7.4Hz,3H),1.78-1.92(m,2H),2.92-3.26(m,2H), 3.60-3.70(m,1H),3.64(s,3H),4.70-4.81(m,1H), 5.78(d,J=1.3Hz,1H),6.70-8.00(m,25H)
I-115	$CDCl_3$	0.89(t, J=7.4Hz,3H),1.78-1.89(m,2H),2.97-3.33(m,2H), 3.58-3.67(m,1H),3.72(s,3H),4.72-4.84(m,1H), 5.85(d,J=1.3Hz,1H),6.80-6.90(m,5H),7.17-7.40(m,8H), 7.90(d,J=8.8Hz,2H)
I-116	$CDCl_3$	0.89(t, J=7.4Hz,3H),1.78-1.92(m,2H),2.97-3.31(m,2H), 3.58-3.65(m,1H),3.70(s,3H),4.72-4.85(m,1H), 5.83(d,J=1.3Hz,1H),6.80-8.00(m,25H)
I-117	$CDCl_3$	0.91(t, J=7.2Hz,3H),1.20-1.40(m,2H),1.70-1.85(m,2H), 2.92-3.32(m,2H),3.55-3.70(m,1H),3.65,3.70(s,3H), 4.68-4.80(m,1H),5.75,5.82(d,J=1.5Hz,1H),5.93,5.95(s,2H), 6.73-8.00(m,23H)
I-118	$DMSO-d_6$	0.80-0.93(m,3H),1.10-1.45(m,2H),1.53-1.80(m,2H), 3.00-3.15(m,2H),3.56-3.75(m,4H),4.52-4.70(m,1H), 5.94-6.05(m,3H),6.74-7.00(m,7H),7.15-7.35(m,3H), 7.72-7.83(m,2H),12.75(brs,1H)
I-119	$CDCl_3$	0.92(t, J=7.1Hz,3H),1.10-1.45(m,6H),1.58-1.80(m,8H), 2.20-2.70(m,5H),2.90-3.90(m,10H),4.68-4.80(m,1H), 5.69-5.76(m,1H),5.92-5.97(m,2H),6.72-6.95(m,7H), 7.12-7.30(m,5H)
I-120	$CDCl_3$	0.92(t, J=7.1Hz,3H),1.15-1.45(m,2H),1.65-1.76(m,2H), 2.31(s,3H),2.26-2.50(m,4H),2.90-3.95(m,10H), 4.68-4.83(m,1H),5.69-5.76(m,1H),5.90-6.00(m,2H), 6.70-6.95(m,7H),7.10-7.30(m,5H)
I-121	$CDCl_3$	0.92(t, J=7.2Hz,3H),1.20-2.00(m,17H),2.35-3.32(m,8H), 3.67-3.80(m,4H),4.69-4.82(m,1H), 5.68-5.77(m,1H),5.90-6.00(m,2H),6.72-6.95(m,8H), 7.12-7.40(m,4H)

Table 87

No.		H^1
I-122	$CDCl_3$	2.97-3.34(m,2H),3.09(s,3H),3.62-3.75(m,4H), 4.80-5.10(m,2H),5.85(d,J=1.0Hz,1H),6.83-7.50(m,12H), 7.93(d,J=9.0Hz,2H)
I-123	$CDCl_3$	3.07(s,3H),2.95-3.35(m,2H),3.60-3.70(m,1H),3.70(s,3H), 4.95(br,2H),5.83(d,J=1.2Hz,1H),6.78-8.02(m,25H)
I-124	$CDCl_3$	1.22-1.40(m,4H),2.94-3.30(m,2H),3.58-3.63(m,1H), 3.67(s,3H),5.80(d,J=1.3Hz,1H),6.80-8.20(m,25H)
I-125	DMSO-d_6	1.10-1.40(m,4H),3.00-3.20(m,2H),3.57-3.67(m,1H), 3.70(s,3H),5.98(d,J=1.2Hz,1H),6.85-7.00(m,4H), 7.10-7.35(m,7H),7.74-7.80(m,3H),12.76(brs,1H)
I-126	DMSO-d_6	3.02-3.18(m,2H),3.62-3.75(m,4H),5.99-6.08(m,2H), 6.84-7.00(m,4H),7.16-7.45(m,12H),7.70-7.84(m,3H), 12.7(brs,1H)

Table 88

No.		H^1
I-127	DMSO-d_6	1.45(d, J=6.8Hz,3H),2.98(d,J=8.2Hz,2H),3.75(s,3H), 3.98-4.10(m,1H),4.82-4.99(m,1H),6.25(d,J=4.5Hz,1H), 6.72-6.94(m,2H),7.10-7.40(m,10H),7.88(d,J=8.8Hz,2H), 12.73(brs,1H)
I-128	$CDCl_3$	1.53(d, J=7.0Hz,3H),3.19(d,J=7.7Hz,2H),3.79(s,3H), 3.94-4.04(m,1H),4.95-5.16(m,1H),6.04(d,J=4.7Hz,1H), 6.78-6.92(m,3H),7.08(s,1H),7.10-7.45(m,19H), 8.07(d,J=9.0Hz,2H)
I-129	$CDCl_3$	1.53(d, J=7.0Hz,3H),2.32(s,3H)2.25-2.50(m,4H), 3.20(d,J=7.8Hz,2H),3.30-3.90(m,4H),3.80(s,3H), 3.90-4.02(m,1H),4.97-5.10(m,1H),5.97(d,J=4.6Hz,1H), 6.78-6.88(m,2H),6.92(d,J=8.0Hz,1H),7.10-7.40(m,11H)
I-130	$CDCl_3$	1.44(d, J=6.8Hz,3H),2.96(d,J=8.4Hz,2H),3.75(s,3H), 3.98-4.12(m,1H),4.76-4.94(m,1H),6.26(d,J=4.7Hz,1H), 6.72-6.95(m,2H),7.08-7.42(m,10H),7.85(d,J=8.8Hz,2H), 12.75(brs,1H)
I-131	$CDCl_3$	1.53(d, J=7.0Hz,3H),3.18(d,J=7.7Hz,2H),3.80(s,3H), 3.95-4.08(m,1H),4.95-5.12(m,1H),6.09(d,J=4.7Hz,1H), 6.75-6.90(m,3H),7.08(s,1H),7.10-7.45(m,19H), 8.07(d,J=9.0Hz,2H)
I-132	$CDCl_3$	1.53(d, J=6.9Hz,3H),2.31(s,3H)2.35-2.50(m,4H), 3.18(d,J=7.9Hz,2H),3.30-3.90(m,4H),3.80(s,3H), 3.94-4.05(m,1H),4.97-5.12(m,1H),6.02(d,J=4.6Hz,1H), 6.78-6.92(m,3H),7.10-7.40(m,11H)
I-133	$CDCl_3$	1.52(d, J=6.9Hz,3H),3.16(d,J=7.9Hz,2H),3.79(s,3H), 3.95-4.07(m,1H),4.95-5.11(m,1H),5.33(s,2H), 6.08(d,J=4.6Hz,1H),6.76-6.90(m,3H),7.10-7.47(m,14H), 8.00(d,J=9.0Hz,2H)
I-134	DMSO-d_6	1.45(d, J=7.0Hz,3H),2.64(s,3H),2.90-3.15(m,6H), 3.48-3.80(m,4H),3.76(s,3H),3.99-4.10(m,1H), 4.77-4.93(m,1H),6.21(d,J=4.4Hz,1H), 6.72-6.83(m,1H),6.92(d,J=7.6Hz,1H),7.08-7.42(m,12H)

Table 89

No.		H^1
I-135	$CDCl_3$	0.92(t,J=7.4Hz,3H),1.28(t,J=7.0Hz,3H),1.77-1.95(m,2H), 2.91-3.32(m,2H),3.65-3.74(m,1H),3.93(q,J=7.0Hz,2H), 4.70-4.84(m,1H),5.78(d,J=1.3Hz,1H),6.77-7.00(m,5H), 7.12-7.40(m,7H),7.90(d,J=8.9Hz,2H)
I-136	$CDCl_3$	0.91(t,J=7.3Hz,3H),1.27(t,J=7.0Hz,3H),1.76-1.95(m,2H), 2.90-3.31(m,2H),3.62-3.74(m,1H),3.92(q,J=7.0Hz,2H), 4.69-4.83(m,1H),5.76(d,J=1.3Hz,1H),6.84-6.96(m,5H), 7.07(s,1H),7.12-7.48(m,17H),7.96(d,J=9.0Hz,2H)
I-137	$CDCl_3$	0.92(t,J=7.4Hz,3H),1.10-1.40(m,7H),1.55-1.96(m,8H), 2.20-2.70(m,5H),2.88-4.00(m,9H),4.71-4.83(m,1H), 5.69(d,J=1.3Hz,1H),6.76-7.00(m,5H),7.12-7.40(m,10H)
I-138	$CDCl_3$	0.89(t,J=7.4Hz,3H),1.32(t,J=7.0Hz,3H),1.78-1.95(m,2H), 2.96-3.38(m,2H),3.62-3.72(m,1H),3.97(q,J=7.0Hz,2H), 4.70-4.85(m,1H),5.84(d,J=1.2Hz,1H),6.78-6.98(m,5H), 7.15-7.40(m,7H),7.89(d,J=8.8Hz,2H)
I-139	$CDCl_3$	0.88(t,J=7.4Hz,3H),1.31(t,J=7.0Hz,3H),1.76-1.93(m,2H), 2.94-3.36(m,2H),3.60-3.71(m,1H),3.95(q,J=7.0Hz,2H), 4.71-4.83(m,1H),5.81(d,J=1.2Hz,1H),6.78-6.98(m,5H), 7.07(s,1H),7.14-7.46(m,17H),7.96(d,J=9.0Hz,2H)
I-140	$CDCl_3$	0.80-0.94(m,6H),1.00-1.92(m,6H),2.91-3.34(m,2H), 3.66-3.75(m,1H),3.86-4.00(m,2H),4.66-4.86(m,1H), 5.75-5.78(m,1H),6.77-7.40(m,12H),7.90(d,J=8.6Hz,2H)
I-141	$CDCl_3$	0.80-1.94(m,9H),2.90-3.33(m,2H),3.64-3.76(m,1H), 3.84-4.00(m,2H),5.74-5.76(m,1H),6.73-7.45(m,23H), 7.96(d,J=8.7Hz,2H)
I-142	$CDCl_3$	0.80(t,J=6.8Hz,3H),0.89(t,J=7.0Hz,3H),0.95-1.96(m,3H), 1.32(t,J=7.0Hz,3H),2.96-3.40(m,2H),3.62-3.73(m,1H), 3.90-4.04(m,2H),4.68-4.88(m,1H),5.83(s,1H), 6.82-7.40(m,12H),7.89(d,J=8.8Hz,2H)
I-143	$CDCl_3$	0.77-1.95(m,9H),2.95-3.40(m,2H),3.62-3.70(m,1H), 3.90-4.04(m,2H),5.81(s,1H),6.80-7.45(m,23H), 7.96(d,J=8.4Hz,2H)

Table 90

No.		H^1
I-144	$CDCl_3$	1.29(t,J=7.0Hz,3H),2.94-3.37(m,2H),3.66-3.76(m,1H), 3.95(q,J=7.0Hz,2H),5.84(d,J=1.3Hz,1H),6.16(d,J=8.4Hz,1H), 6.79-6.95(m,4H),7.15-7.40(m,13H),7.91(d,J=8.9Hz,2H)
I-145	$CDCl_3$ (300MHz)	1.04-2.20(m,11H),2.20-2.32(m,2H),2.60-4.40(m,14H), 5.77(d,J=1.2Hz,1H),6.13(d,J=8.1Hz,1H),6.84(d,J=8.1Hz,1H), 6.87-6.93(m,3H),7.16-7.40(m,15H)
I-146	$CDCl_3$	1.28(t,J=7.0Hz,3H),2.94-3.36(m,2H),3.65-3.75(m,1H), 3.94(q,J=7.0Hz,2H),5.83(d,J=1.3Hz,1H),6.15(d,J=8.6Hz,1H), 6.77-7.00(m,4H),7.07(s,1H),7.12-7.48(m,23H), 7.96(d,J=9.0Hz,2H)
I-147	$CDCl_3$	1.26(t,J=7.0Hz,3H),2.90-3.32(m,2H),3.64-3.72(m,1H), 3.90(q,J=7.0Hz,2H),4.02-4.10(m,2H),4.25-4.34(m,1H), 5.74(d,J=1.3Hz,1H),5.83-5.95(m,1H),6.13(d,J=8.2Hz,1H), 6.74-6.90(m,4H),7.20-7.45(m,26H)
I-148	$CDCl_3$	1.30(t,J=7.0Hz,3H),2.93-3.34(m,2H),3.40-3.76(m,9H), 3.90-4.00(m,2H),5.76(d,J=1.4Hz,1H),6.15(d,J=8.4Hz,1H), 6.80-6.95(m,4H),7.15-7.40(m,15H)
I-149	$CDCl_3$	1.30(t,J=7.0Hz,3H),2.93-3.34(m,2H),3.66-3.75(m,1H), 3.95(q,J=7.0Hz,2H),5.80(d,J=1.4Hz,1H),6.10-7.00(m,7H), 7.25-7.40(m,23H),7.65(d,J=8.8Hz,2H)
I-150	$CDCl_3$ (300MHz)	1.29(t,J=6.9Hz,3H),2.53-2.60(m,4H),2.75(t,J=6.0Hz,2H), 3.01(dd,J=8.7,14.3Hz,1H),3.30(dd,J=5.7,14.4Hz,1H), 3.67-3.75(m,5H),3.90-4.01(m,2H),4.42(t,J=6.0Hz,2H), 5.82(d,J=1.5Hz,1H),6.14(d,J=8.7Hz,1H),6.86-6.96(m,4H), 7.15-7.39(m,13H),7.84-7.90(m,2H)
I-151	$CDCl_3$ (300MHz)	1.08-1.20(m,3H),2.84-2.97(m,1H),3.11-3.24(m,1H), 3.57-3.66(m,1H),3.72-3.86(m,2H),5.74-5.81(m,1H), 6.14(d,J=8.7Hz,1H),6.56-6.82(m,4H),7.04-7.40(m,17H), 7.62-7.74(m,2H),7.86-7.98(m,2H)
I-152	CD_3OD (300MHz)	1.25-1.42(m,3H),2.99-3.13(m,1H),3.22-3.30(m,1H), 3.72-3.80(m,1H),3.94-4.20(m,2H),5.93-6.22(m,2H), 6.73-7.87(m,18H)
I-153	$CDCl_3$ (300MHz)	1.22(s,9H),1.29(t,J=7.2Hz,3H),3.01(dd,J=8.7,14.3Hz,1H), 3.30(dd,J=6.0,14.3Hz,1H),3.70(ddd,J=1.2,6.0,8.9Hz,1H), 3.90-4.01(m,2H),5.83(d,J=1.2Hz,1H),5.96(s,2H), 6.14(d,J=8.7Hz,1H),6.80-6.96(m,4H),7.15-7.38(m,13H), 7.86-7.93(m,2H)

Table 91

No.		H^1
I-154	DMSO-d_6	1.22(t,J=7.0Hz,3H),2.96-3.18(m,2H),3.47(s,2H), 3.60-3.70(m,1H),3.95(q,J=7.0Hz,2H),5.87(d,J=1.4Hz,1H), 6.04(d,J=8.0Hz,1H),6.75(d,J=8.6Hz,2H),6.80-7.00(m,2H), 7.07(d,J=8.6Hz,2H),7.15-7.60(m,12H),7.72(d,J=8.0Hz,1H), 12.26(brs,1H)
I-155	DMSO-d_6	1.22(t,J=6.9Hz,3H),3.02-3.15(m,2H),3.64-3.73(m,1H), 3.96(q,J=6.9Hz,2H),6.00(d,J=1.2Hz,1H),6.03(d,J=8.0Hz,1H), 6.39(d,J=16.0Hz,1H),6.82-6.96(m,4H),7.16-7.60(m,15H), 7.74(d,J=8.0Hz,1H),12.30(brs,1H)
I-156	$CDCl_3$ (300MHz)	1.30(t,J=6.9Hz,3H),3.01(dd,J=8.4,14.1Hz,1H), 3.33(dd,J=8.7,14.1Hz,1H),3.73(ddd,J=1.2,5.7,8.7Hz,1H), 3.91-4.01(m,2H),5.89(d,J=1.2Hz,1H),6.08(d,J=8.7Hz,1H), 6.82-6.94(m,4H),7.10-7.35(m,11H),7.90-7.96(m,2H)
I-157	$CDCl_3$ (300MHz)	1.29(t,J=6.9Hz,3H),3.00(dd,J=8.7,14.3Hz,1H), 3.31(dd,J=5.4,14.0Hz,1H),3.72(ddd,J=1.2,5.7,8.4Hz,1H), 3.91-4.01(m,2H),5.83(d,J=1.2Hz,1H),6.07(d,J=8.1Hz,1H), 6.80-6.97(m,4H),7.06-7.43(m,22H),7.96-8.01(m,2H)
I-158	DMSO-d_6	1.23(t,J=6.8Hz,3H),2.26(s,3H),2.28(s,3H),3.00-3.15(m,2H), 3.66-3.74(m,1H),3.95(q,J=6.8Hz,2H),5.92(d,J=8.0Hz,1H), 6.03(d,J=1.3Hz,1H),6.82-7.00(m,4H),7.20-7.30(m,10H), 7.61(d,J=8.0Hz,1H),7.77(d,J=8.8Hz,2H),12.70(brs,1H)
I-159	$CDCl_3$ (300MHz)	1.30(t,J=7.2Hz,3H),3.01(dd,J=8.4,14.3Hz,1H), 3.33(dd,J=6.0,14.1Hz,1H),3.73(ddd,J=1.2,5.7,8.7Hz,1H), 3.91-4.01(m,2H),5.85(d,J=1.5Hz,1H),6.11(d,J=8.1Hz,1H), 6.82-6.95(m,4H),6.99-7.08(m,4H),7.12-7.30(m,7H), 7.89-7.96(m,2H)
I-160	DMSO-d_6	1.21(t,J=7.0Hz,3H),3.00-3.15(m,2H),3.62-3.75(m,1H), 3.72(s,3H),3.74(s,3H),3.96(q,J=7.0Hz,2H), 5.91(d,J=8.1Hz,1H),6.03(s,1H),6.82-7.00(m,8H), 7.13-7.30(m,6H),7.59(d,J=8.1Hz,1H),7.77(d,J=8.8Hz,2H), 12.76(brs,1H)

Table 92

No.		H^1
I-161	$CDCl_3$	0.94(t,J=7.5Hz,3H)1.60-1.79(m,2H),2.95-3.56(m,2H), 3.68-3.79(m,1H),3.84(d,J=6.5Hz,2H),5.83(d,J=1.3Hz,1H), 6.16(d,J=8.5Hz,1H),6.50-6.95(m,4H),7.15-7.40(m,13H), 7.90(d,J=8.8Hz,2H)
I-162	DMSO-d_6	0.88(t,J=7.3Hz,3H),1.50-1.71(m,2H),3.00-3.20(m,2H), 3.60-3.75(m,1H),3.86(t,J=6.3Hz,2H),6.00-6.10(m,2H), 6.80-7.00(m,4H),7.16-7.42(m,12H),7.77(d,J=8.7Hz,2H), 12.73(brs,1H)
I-163	DMSO-d_6	1.21(d,J=6.9Hz,3H),1.26(d,J=6.1Hz,3H),2.90-3.50(m,2H), 3.68-3.77(m,1H),4.45-4.60(m,2H),5.83(d,J=1.2Hz,1H), 6.16(d,J=8.4Hz,1H),6.80-6.95(m,4H),7.15-7.40(m,13H), 7.89(d,J=8.8Hz,2H)

Table 93

No.		H^1
I-164	DMSO-d_6	1.23(s,3H),1.42(d,J=7.0Hz,3H),3.03-3.24(m,2H), 4.75-4.91(m,1H),5.96(s,1H),7.00(d,J=8.8Hz,2H), 7.25-7.40(m,11H),7.86(d,J=8.8Hz,2H)
I-165	$CDCl_3$	1.42(s,3H),1.51(d,J=7.0Hz,3H),2.32(s,3H),2.20-2.50(m,4H), 2.89-3.17(m,2H),3.30-3.90(m,4H),4.89-5.05(m,1H), 5.65(s,1H),6.79(d,J=8.0Hz,1H),6.98(d,J=8.8Hz,2H), 7.10-7.40(m,12H)
I-166	DMSO-d_6	1.10(t,J=7.4Hz,3H),1.41(d,J=6.9Hz,3H),1.55-1.95(m,2H), 3.05-3.23(m,2H),4.72-4.90(m,1H),5.88(s,1H), 7.05(d,J=8.8Hz,2H),7.20-7.40(m,11H),7.87(d,J=8.8Hz,2H), 12.77(brs,1H)
I-167	$CDCl_3$	1.19(t,J=7.4Hz,3H),1.50(d,J=6.9Hz,3H),1.74-2.12(m,2H), 2.32(s,3H),2.28-2.50(m,4H),2.90-3.19(m,2H), 3.30-3.90(m,4H),4.86-5.02(m,1H),5.61(s,1H), 6.81(d,J=8.1Hz,1H),7.02(d,J=8.8Hz,2H),7.10-7.40(m,12H)
I-168	DMSO-d_6	1.07(t,J=7.4Hz,3H),1.40(d,J=7.0Hz,3H),1.50-1.90(m,2H), 3.07-3.26(m,2H),4.70-4.85(m,1H),5.93(s,1H), 7.00(d,J=8.8Hz,2H),7.15-7.40(m,11H),7.84(d,J=8.8Hz,2H), 12.76(brs,1H)
I-169	$CDCl_3$	1.17(t,J=7.4Hz,3H),1.48(d,J=7.0Hz,3H),1.68-2.15(m,2H), 2.32(s,3H),2.20-2.60(m,4H),2.94-3.21(m,2H), 3.30-3.90(m,4H),4.88-5.03(m,1H),5.67(s,1H), 6.78(d,J=8.1Hz,1H),7.01(d,J=8.7Hz,2H),7.15-7.40(m,12H)

Table 94

No.		H^1
I-170	DMSO-d_6	1.30(s,3H),1.45(d,J=7.0Hz,3H),2.74-3.23(m,2H), 4.82-4.90(m,1H),6.10(s,1H),7.19-7.50(m,13H), 7.93(d,J=8.8Hz,2H),12.75(brs,1H)
I-171	$CDCl_3$	1.33(s,3H),1.55(d,J=6.9Hz,3H),2.32(s,3H),2.30-2.50(m,4H), 2.93-3.23(m,2H),3.40-3.90(m,4H),4.97-5.13(m,1H), 5.72(s,1H),6.90(d,J=7.8Hz,1H),7.15-7.45(m,14H)

Table 95

No.		H^1
I-172	DMSO-d_6	0.91(t,J=7.4Hz,3H),1.45(d,J=7.0Hz,3H),1.60-1.74(m,2H), 2.88-3.27(m,2H),4.68-4.95(m,1H),6.18(s,1H), 7.15-7.45(m,13H),7.92(d,J=8.9Hz,2H),12.76(brs,1H)
I-173	$CDCl_3$	0.97(t,J=7.4Hz,3H),1.55(d,J=7.0Hz,3H),1.60-1.80(m,2H), 2.32(s,3H),2.30-2.50(m,4H),3.00-3.90(m,4H), 4.97-5.12(m,1H),5.81(s,1H),6.93(d,J=7.8Hz,1H), 7.20-7.45(m,14H)
I-174	DMSO-d_6	0.86(t,J=7.2Hz,3H),1.45(d,J=7.0Hz,3H),1.56-1.70(m,2H), 2.98-3.28(m,2H),4.83-4.98(m,1H),6.19(s,1H), 7.18-7.48(m,13H),7.94(d,J=8.9Hz,2H)
I-175	$CDCl_3$	0.92(t,J=7.4Hz,3H),1.54(d,J=7.0Hz,3H),1.60-1.75(m,2H), 2.32(s,3H),2.30-2.50(m,4H),3.02-3.90(m,4H), 4.97-5.12(m,1H),5.76(s,1H),6.97(d,J=7.9Hz,1H), 7.20-7.45(m,14H)
I-176	$CDCl_3$	0.90(t,J=7.4Hz,3H),0.98(t,J=7.2Hz,3H),1.64-1.95(m,4H), 2.98-3.37(m,2H),4.74-4.86(m,1H),5.88(s,1H), 6.93(d,J=8.3Hz,1H),7.09(s,1H),7.20-7.46(m,22H), 8.13(d,J=8.9Hz,2H)
I-177	$CDCl_3$	0.91(t,J=7.4Hz,3H),1.01(t,J=7.3Hz,3H),1.66-1.96(m,4H), 2.96-3.38(m,2H),4.76-4.88(m,1H),5.93(s,1H), 6.97(d,J=8.2Hz,1H),7.20-7.42(m,12H),8.06(d,J=8.8Hz,2H)
I-178	$CDCl_3$	0.86-1.02(m,6H),1.60-1.78(m,2H),1.80-1.95(m,2H), 2.30-2.52(m,4H),2.32(s,3H),3.00-3.38(m,2H), 3.40-3.80(m,4H),4.75-4.87(m,1H),5.81(s,1H), 6.98(d,J=8.3Hz,1H),7.20-7.45(m,14H)
I-179	$CDCl_3$	0.85-0.95(m,6H),1.58-1.94(m,4H),3.02-3.40(m,2H), 4.71-4.84(m,1H),5.82(s,1H),6.98(d,J=8.3Hz,1H), 7.09(s,1H),7.20-7.46(m,22H),8.14(d,J=8.9Hz,2H)
I-180	$CDCl_3$	0.87-0.97(m,6H),1.62-1.94(m,4H),3.01-3.41(m,2H), 4.73-4.85(m,1H),5.85(s,1H),7.00(d,J=8.6Hz,1H), 7.20-7.40(m,12H),8.08(d,J=8.8Hz,2H)
I-181	$CDCl_3$	0.86-0.97(m,6H),1.59-1.72(m,2H),1.78-1.94(m,2H), 2.30-2.50(m,4H),2.32(s,3H),3.03-3.41(m,2H), 3.41-3.80(m,4H),4.72-4.85(m,1H),5.74(s,1H), 7.02(d,J=8.2Hz,1H),7.20-7.45(m,14H)

Table 96

No.		H^1
I-182	$CDCl_3$	1.51(d, J=7.0Hz,3H),2.02-2.24(m,2H),2.65-2.92(m,2H), 3.30-3.40(m,1H),4.93-5.09(m,1H),5.60(d,J=1.3Hz,1H), 6.84(d,J=8.4Hz,1H),7.08-7.45(m,23H),8.09(d,J=8.8Hz,2H)
I-183	$CDCl_3$	1.52(d, J=6.9Hz,3H),2.07-2.27(m,2H),2.66-2.94(m,2H), 3.32-3.41(m,1H),4.90-5.10(m,1H),5.61(d,J=1.2Hz,1H), 6.86(d,J=8.1Hz,1H),7.15-7.40(m,12H),8.04(d,J=8.8Hz,2H)
I-184	$CDCl_3$	1.55(d, J=6.9Hz,3H),2.08-2.32(m,2H),2.68-2.94(m,2H), 3.29-3.39(m,1H),4.94-5.12(m,1H),5.67(d,J=1.4Hz,1H), 6.81(d,J=8.0Hz,1H),7.08-7.46(m,23H),8.08(d,J=8.9Hz,2H)
I-185	$CDCl_3$	1.55(d, J=7.0Hz,3H),2.10-2.30(m,2H),2.69-2.97(m,2H), 3.30-3.40(m,1H),4.90-5.12(m,1H),5.69(d,J=1.4Hz,1H), 6.83(d,J=8.0Hz,1H),7.10-7.40(m,12H),8.03(d,J=8.9Hz,2H)

Experiment 1 Chymase inhibitory activity

(1) Preparation of Compound (I)

[0133] Compound (I) was dissolved in dimethylsulfoxide (DMSO) at 10^{-2} M. Concentration of DMSO for activity measurement was 1 %.

(2) Measurement of a chymase inhibitory activity

[0134] Compound (I) dissolved in DMSO and purified human chymase (Takai et al., Clinica Chimica Acta 265, 1997, 13-20) were added to a buffer (0.1M Tris-HCl, 1.8M NaCl pH8.0). After the mixture was treated for 30 minutes at 37 °C, Suc-Ala-Ala-Pro-Phe-pNA (BACHEM Feinchemikalien AG) was added at 0.5 mM as a substrate and the mixture was enzymatically reacted at 37 °C.

[0135] After the reaction, the absorption intensity (405 nm) of the solution was measured to calculate the inhibitory rate.

(3) Result

[0136] Concentrations giving half-maximal inhibition (IC_{50} of Compound (I) against human chymase activity are shown in Table 97.

Table 97

Compound No.	IC_{50}(nM)
I-36	4.2
I-37	11
I-38	2.2
I-39	0.46
I-40	0.7
I-41	1.9
I-43	1.08
I-44	3.8
I-45	20
I-46	31
I-47	3.0
I-49	4.3
I-50	1.13
I-51	30
I-52	5.2
I-53	3.0
I-54	3.5
I-55	17
I-56	2.95
I-57	24
I-58	5.7
I-61	0.33
I-62	0.17
I-67	0.18
I-68	0.68
I-69	16.2
I-70	1.28
I-71	19.0
I-73	0.92
I-74	8.6
I-75	1.2
I-76	2.4
I-77	0.26
I-81	13.0
I-85	2.4
I-87	0.8
I-89	18.5
I-95	16.0
I-102	1.0
I-104	0.19
I-105	2.8
I-107	0.68
I-108	0.48
I-111	11.0
I-113	0.5
I-115	18.0
I-118	2.25
I-119	2.1
I-120	0.26
I-121	0.29
I-125	19.0
I-126	2.95
I-129	1.02
I-130	1.18
I-132	0.25
I-134	0.1
I-135	2.1
I-137	3.4
I-140	10.0
I-144	3.1
I-145	10.8
I-148	0.55
I-150	5.4
I-151	4.6
I-152	4.1
I-154	2.5
I-155	3.8
I-158	8.2
I-159	14.5
I-160	15.0
I-161	18.0
I-172	115
I-173	190

[0137] As shown in Table 97, the compounds of the present invention have a chymase inhibitory activity.

Experiment 2 Cytokine production inhibitory activity

[0138] After human blood obtained in heparinized tube was layered on the Filcoll - Hypaque mixed solution (density=1.114, mono-poly separation solution, Dainippon Pharmaceutical Co., Ltd.), it was centrifuged to prepare mononuclear cells. The obtained mononuclear cells were suspended in a medium (Macrophage-SFM:GIBCO) to adjust 2 X 10^6 cells/ml and cultivated in 48-well plates. Ten minutes later addition of the compound of the present invention, Concanavalin A (5 μg/ml) was added to stimulate cells. After forty-eight hours, IL-1β, IL-2, IL-4, IL-5, IL-6, TNF-α and IFNγ in the

culture supernatant were quantified by ELISA method. The following kits were used for the quantification of these cytokines.

IL-1β: Quantikine(Trademark) Human IL-1β ELISA KIT (R&D system)
IL-2: Quantikine(Trademark) Human IL-2 ELISA KIT (R&D system)
IL-4: Quantikine(Trademark) Human IL-4 ELISA KIT (R&D system)
IL-5: Quantikine(Trademark) Human IL-5 ELISA KIT (R&D system)
IL-6: Quantikine(Trademark) Human IL-6 ELISA KIT (R&D system)
TNF-α: Quantikine(Trademark) Human TNF-α ELISA KIT (R&D system)
IFNγ: Quantikine(Trademark) Human IFNγ ELISA KIT (R&D system)

[0139] The results are shown in Table 98.

Table 98

	IC_{50} (μM)	
	I-39	I-62
IL-1β	2.7	11.3
IL-2	2.7	2.4
IL-4	11.7	20.2
IL-5	6.5	13.9
IL-6	6.4	9.3
TNF-α	1.9	6.8
IFNγ	12.1	17.1

[0140] As shown in Table 98, the compounds of the present invention have a cytokine production inhibitory activity.

Experiment 3 Inhibitory activity on other serine proteases

1) Trypsin

[0141] The mixture of 10 μl of bovine pancreas trypsin (1.5 μg/ml in 1 mM HCl, 20 mM $CaCl_2$, SIGMA), 80 μl of buffer (50mM Tris-HCl, 2 mM $CaCl_2$ pH 8.0) and 1 μl of the compound of the present invention (in DMSO) was incubated for 20 minutes at room temperature and for 10 minutes at 37 °C. The resultant mixture was reacted with 10 μl of a substrate (5 mM sucAAPRpNA (BACHEM Feinchemikalien AG) in 50 % DMSO) for about 60 minutes at 37 °C and the absorption intensity (405 nm) was measured.

2) Plasmin

[0142] The mixture of 10 μl of human serine plasmin (0.1 mg/ml in 1 mM HCl, 20 mM $CaCl_2$, SIGMA), 80 μl of buffer (50mM Tris-HCl, pH 7.5, 50 mM NaCl) and 1 μl of the compound of the present invention (in DMSO) was incubated for 20 minutes at room temperature and for 10 minutes at 37 °C. The resultant mixture was reacted with 10 μl of a substrate (5 mM Chromozyme PL(TosGPKpNA, Boehringer Mannheim) in H_2O) for about 30 minutes at 37 °C and the absorption intensity (405 nm) was measured.

3) Thrombin

[0143] The mixture of 10 μl of human plasma thrombin (1 U/ml in 10 mM Mes, pH 6.0, 0.1 M NaCl, SIGMA), 80 μl of buffer (0.1 M Tris-HCl, pH 8.0, 10 mM $CaCl_2$, 0.1 M NaCl) and 1 μl of the compound of the present invention (in DMSO) was incubated for 20 minutes at room temperature and for 10 minutes at 37 °C. The resultant mixture was reacted with 10 μl of a substrate (5 mM Chromozyme TH (TosGPRpNA, Boehringer Mannheim) in H_2O) for about 60 minutes at 37 °C and the absorption intensity (405 nm) was measured.

4) Elastase

[0144] The mixture of 10 µl of human neutrophils elastase (0.02 mg/ml in 50 mM Tris-HCl, pH 7.0, 2 mM $CaCl_2$, Athens research and technology), 80 µl of buffer (50mM Tris-HCl, pH 8.0, 2 mM $CaCl_2$) and 1 µl of the compound of the present invention (in DMSO) was incubated for 20 minutes at room temperature and for 10 minutes at 37 °C. The resultant mixture was reacted with 10 µl of a substrate (5 mM sucAAVpNA (BACHEM Feinchemikalien AG) in 50 % DMSO) for about 30 minutes at 37 °C and the absorption intensity (405 nm) was measured.

5) Cathepsin G

[0145] The mixture of 10 µl of human purulent sputum cathepsin (1.7 µg/ml in 1 mM HCl, 20 mM $CaCl_2$, CALBIOCHEM), 80 µl of buffer (50mM Tris-HCl, pH 7.5, 5.2 mM $CaCl_2$) and 1 µl of the compound of the present invention (in DMSO) was incubated for 20 minutes at room temperature and for 10 minutes at 37 °C. The resultant mixture was reacted with 10 µl of a substrate (5 mM sucAAPFpNA in DMSO, BACHEM Feinchemikalien AG) for about 60 minutes at 37 °C and the absorption intensity (405 nm) was measured.

[0146] The IC_{50} values of each serine protease are calculated and compared with IC_{50} value of chymase. The results are shown in Table 99.

Table 99

	I-144		I-158	
	IC_{50}(nM)	fold vs chymase	IC_{50}(nM)	fold vs chymase
Cathepsin G	35.4	11	143.2	17
elastase	>100000	>30000	25000	3000
trypsin	25000	8000	6200	760
thrombin	>100000	>30000	>100000	>10000
plasmin	>10000	>3000	>100000	>10000

[0147] As shown in Table 99, the compounds of the present invention have a chymase-selective inhibitory activity.

Formulation Example 1

[0148]

The compound of the present invention (Ia-1)	15 mg
Starch	15 mg
Lactose	15 mg
Crystalline cellulose	19 mg
Polyvinyl alcohol	3 mg
Distilled water	30 ml
Calcium stearate	3 mg

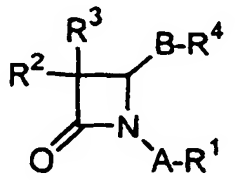
[0149] After all of the above ingredients except for calcium stearate were uniformly mixed, the mixture was crushed and granulated, and dried to give a suitable size of granules. After calcium stearate was added to the granules, tablets were formed by compression molding.

Industrial Applicability

[0150] As explained in the above experiments, the compound of the present invention has a chymase inhibitory activity and/or cytokine production inhibitory activity. The compound of the present invention is very useful as a medicament for preventing and/or treating e.g. circulatory system diseases, inflammation, allergic diseases, rheumatics, asthma and atopy.

Claims

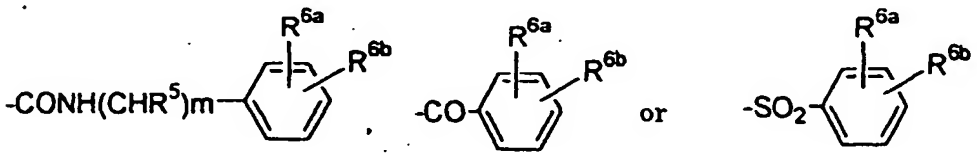
1. A pharmaceutical composition for use as a chymase inhibitor comprising a compound of the formula (I):



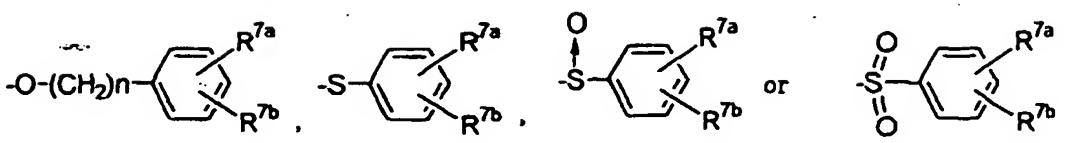
(I)

wherein A is a bond, -CO-, -COO-, -COCO-, -CONH- or -SO_2-,
R^1 is optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl or optionally substituted aryl, and R^1 may be hydrogen when A is a bond, -CO-, -COCO-, -CONH- or -SO_2-,
R^2 and R^3 are each independently hydrogen, halogen, optionally substituted lower alkyl, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted carbamoyl or optionally substituted aryl. B is a bond, -S-, -O-, -S-S-, -SO- or -SO_2-, and
R^4 is hydrogen, optionally substituted lower alkyl, optionally substituted aryl or optionally substituted heterocyclyl and R^4 may be optionally substituted acyl when B is a bond, -S-, -O-, -SO- or -SO_2-,
prodrug, pharmaceutically acceptable salt or hydrate thereof.

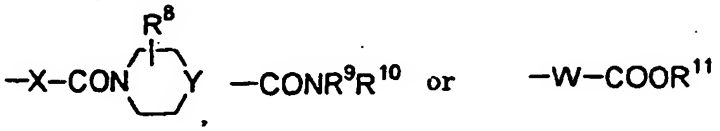
2. The pharmaceutical composition for use as a chymase inhibitor as claimed in claim 1 wherein A-R^1 is



wherein R^5 is hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted lower alkoxy or optionally substituted aryl, R^{6a} and R^{6b} are each independently hydrogen, halogen, hydroxy, lower alkyl, carboxy, lower alkoxycarbonyl, lower alkoxy, aryl, acyl, optionally substituted amino, aryloxy, lower alkylthio or heterocyclyl and R^{6a} and R^{6b} taken together may form lower alkylenedioxy, and m is 0 or 1,
R^2 and R^3 are each independently hydrogen, optionally substituted phenyl or optionally substituted benzyl,
B-R^4 is hydrogen, optionally substituted acyloxy, and

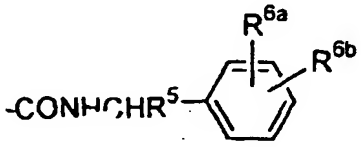


wherein R^{7a} and R^{7b} are each independently hydrogen, halogen, lower alkyl, lower alkoxy, lower alkenyl, amino, acylamino,

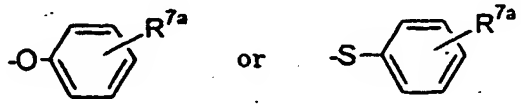


wherein X and W are each independently a bond, lower alkylene or lower alkenylene, Y is a bond, $-CH_2-$, $-NR^{12}-$ (wherein R^{12} is hydrogen, cycloalkyl, heterocyclyl or lower alkyl optionally substituted with methylenedioxyphenyl) or -O-, R^8 is hydrogen, optionally substituted lower alkyl or optionally substituted carbamoyl, R^9, R^{10} and R^{11} are each independently hydrogen, optionally substituted lower alkyl, optionally substituted lower alkenyl, optionally substituted amino, optionally substituted aryl or optionally substituted arylsulfonyl, and n is an integer of 0 to 6.

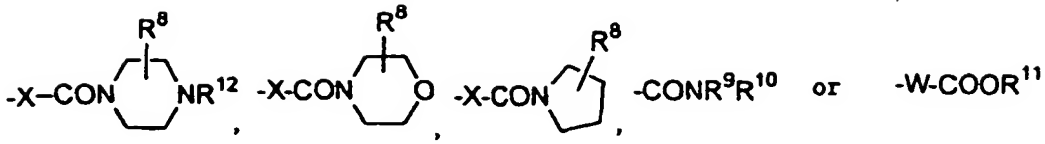
3. The pharmaceutical composition for use as a chymase inhibitor as claimed in claim 1 wherein A-R^1 is



wherein R^5 is C1 to C3 alkyl or optionally substituted phenyl wherein the substituent is halogen, lower alkyl or lower alkoxy, R^{6a} and R^{6b} are each independently hydrogen, halogen, lower alkyl or lower alkoxy.
R^2 is benzyl optionally substituted with lower alkoxy,
R^3 is hydrogen,
B-R^4 is acyloxy,



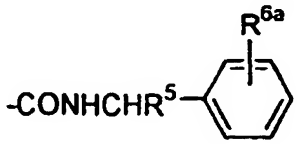
wherein R^{7a} is hydrogen,



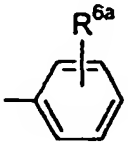
wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted lower alkyl or optionally substituted phenyl and R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl.

4. The pharmaceutical composition for use as a chymase inhibitor as claimed in claim 1

wherein A-R^1 is



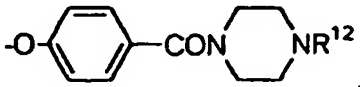
wherein R^5 is C1 to C3 alkyl or



and all R^{6a} are the same and hydrogen, halogen, lower alkyl or lower alkoxy.

5. The pharmaceutical composition for use as a chymase inhibitor as claimed in claim 1

wherein A-R^1 is -CONHCHR^{5}Ph wherein Ph is phenyl, R^2 is benzyl, R^3 is C1 to C3 alkyl, B-R^4 is



and R^5 and R^{12} are each independently C1 to C3 alkyl.

6. A pharmaceutical composition for use as a cytokine production inhibitor comprising the compound of the formula (I) according to claim 1, prodrug, pharmaceutically acceptable salt or hydrate thereof.

7. A pharmaceutical composition for use as a cytokine production inhibitor comprising the compound of the formula (I) according to claim 1 wherein A-R^1, R^2, R^3 and B-R^4 are the same as defined in claim 2, prodrug, pharmaceutically acceptable salt or hydrate thereof.

8. A pharmaceutical composition for use as a cytokine production inhibitor comprising the compound of the formula (I) according to claim 1 wherein A-R^1, R^2, R^3 and B-R^4 are the same as defined in claim 3, prodrug, pharmaceutically acceptable salt or hydrate thereof.

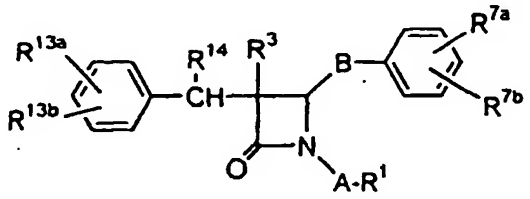
9. The pharmaceutical composition for use as a chymase inhibitor as claimed in any one of claims 1 to 5, which is for use as an anti-inflammatory agent.

10. The pharmaceutical composition for use as a cytokine production inhibitor as claimed in any one of claims 6 to 8, which is for use as an anti-inflammatory agent.

11. A method for preventing and/or treating diseases caused by chymase, comprising administering the compound of the formula (I) according to claim 1, prodrug, pharmaceutically acceptable salt or hydrate thereof.

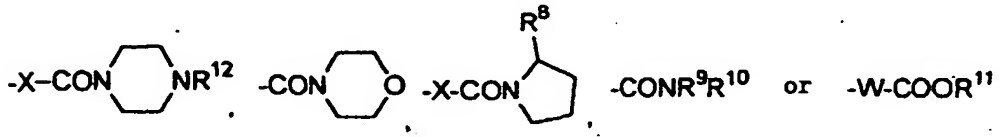
12. Use of the compound of the formula (I) according to claim 1, prodrug, pharmaceutically acceptable salt or hydrate thereof for manufacturing a medicament for preventing and/or treating diseases caused by chymase.

13. A compound of the formula (I'):



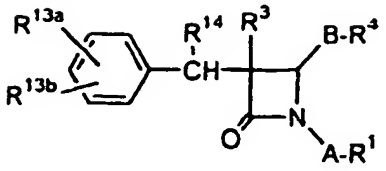
(I')

wherein A and R^1 are the same as defined in claim 1,
R^3 is hydrogen, halogen, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted aryl or optionally substituted benzyl,
R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted amino or optionally substituted lower alkylthio and R^{13a} and R^{13b} taken together may form lower alkylenedioxy,
R^{14} is hydrogen, hydroxy, lower alkyl, lower alkoxy or acyloxy,
R^{7a} is hydrogen,



wherein X and W are each independently a bond, methylene or vinylene, R^8 is methyl or carbamoyl, R^9 is hydrogen or lower alkyl, R^{10} is optionally substituted lower alkyl (wherein the substituent is lower alkyl amino; phenyl optionally substituted with halogen; carboxy; or lower alkoxycarbonyl optionally substituted with aryl), lower alkenyl, lower alkylamino, phenylamino, phenyl or benzenesulfonyl, R^{11} is hydrogen or optionally substituted lower alkyl (wherein the substituent is lower alkylamino; acyloxy; phenyl optionally substituted with halogen or methylenedioxy; or heterocyclyl), and R^{12} is C1 to C3 alkyl or cyclohexyl,
R^{7b} is hydrogen, and B is O or S,
pharmaceutically acceptable salt or hydrate thereof.

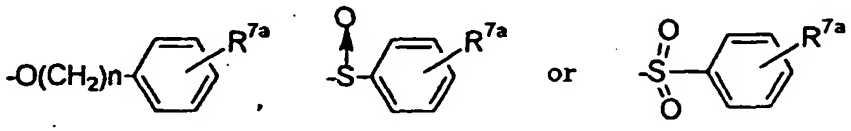
14. A compound of the formula (I"):



(I")

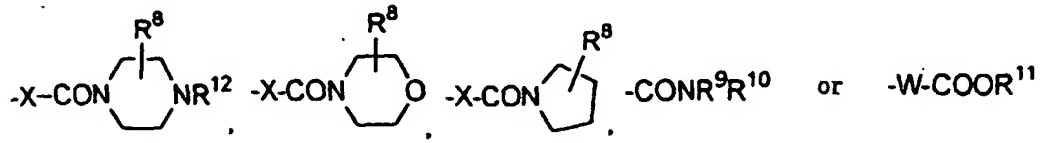
wherein B and R^4 are the same as defined in claim 1,
A is -CO-, -CONH- or -SO_2-,
R^1 is optionally substituted lower alkyl or optionally substituted aryl,
R^3 is hydrogen, halogen, lower alkyl, optionally substituted lower alkoxycarbonyl, optionally substituted acyl, optionally substituted amino, optionally substituted aryl or optionally substituted benzyl,
R^{13a} and R^{13b} are each independently hydrogen, halogen, hydroxy, optionally substituted lower alkyl, optionally substituted lower alkoxy, optionally substituted amino or optionally substituted lower alkylthio and R^{13a} and R^{13b} taken together may form lower alkylenedioxy,
R^{14} is hydrogen, hydroxy, lower alkyl, lower alkoxy or acyloxy, excluding a compound wherein B-R^4 is optionally substituted aryloxy or optionally substituted acylthio and A is CONH,
prodrug, pharmaceutically acceptable salt or hydrate thereof.

15. Th



e compound as claimed in claim 14 wherein B-R^4 is acyloxy,

wherein n is 0 or 1, R^{7a} is hydrogen,



wherein X and W are each independently a bond, methylene or vinylene, R^8 is lower alkyl or carbamoyl, R^9 is hydrogen or optionally substituted lower alkyl, R^{10} is hydrogen, optionally substituted lower alkyl, lower alkenyl, lower alkylamino, arylamino, phenyl or arylsulfonyl, R^{11} is hydrogen, optionally substituted alkyl or optionally substituted phenyl and R^{12} is cycloalkyl or lower alkyl optionally substituted with methylenedioxyphenyl, prodrug, pharmaceutically acceptable salt or hydrate thereof.

16. The compound as claimed in claim 13 or 14 wherein R^3 is hydrogen, prodrug, pharmaceutically acceptable salt or hydrate thereof.

17. The compound as claimed in claim 13 or 14 wherein R^{13a} is hydrogen or C1 to C3 lower alkoxy at the *o*-position and R^{13b} is hydrogen, prodrug, pharmaceutically acceptable salt or hydrate thereof.

18. Any one of compounds selected from the group of

(a) 4-[3-Benzyl-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid,
(b) 3-Benzyl-2-[4-(4-methyl-piperazine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(c) 3-Benzyl-2-[4-(2-carbamoyl-pyrrolidine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(d) 3-Benzyl-2-[4-(2-methyl-pyrrolidine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(e) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid,
(f) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid pyridin-4-ylmethyl ester,
(g) 4-[3-(2-Methoxy-benzyl)-4-oxo-1-(1-phenyl-ethylcarbamoyl)-azetidin-2-yloxy]-benzoic acid benzyl ester,
(h) 3-(2-Methoxy-benzyl)-2-oxo-4-[4-(4-pyrimidin-2-yl-piperazine-1-carbonyl)-phenoxy]-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(i) 2-[4-(4-Cyclohexyl-piperazine-1-carbonyl)-phenoxy]-3-(2-methoxy-benzyl)-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(j) 3-(2-Methoxy-benzyl)-2-[4-(4-methyl-piperazine-1-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid (1-phenyl-ethyl)-amide,
(k) 4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid,
(l) 2-[4-(4-Cyclohexyl-piperazine-1-carbonyl)-phenoxy]-3-(2-ethoxy-benzyl)-4-oxo-azetidine-1-carboxylic acid benzhydryl-amide,
(m) 3-(2-Ethoxy-benzyl)-2-[4-(morpholine-4-carbonyl)-phenoxy]-4-oxo-azetidine-1-carboxylic acid benzhydryl-amide,
(n) {4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-phenyl}-acetic acid,
(o) 3-{4-[1-(Benzhydryl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-phenyl}-acrylic acid,
(p) 4-[1-(Di-p-tolylmethyl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid,
(q) 4-[1-(Bis-4-fluoro-phenyl)-methyl-carbamoyl)-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid and
(r) 4-[1-{[Bis-(4-methoxy-phenyl)-methyl]-carbamoyl}-3-(2-ethoxy-benzyl)-4-oxo-azetidin-2-yloxy]-benzoic acid,
prodrug, pharmaceutically acceptable salt or hydrate thereof

19. A pharmaceutical composition comprising the compound according to any one of claims 13 to 18, prodrug, pharmaceutically acceptable salt or hydrate thereof.

20. The pharmaceutical composition as claimed in claim 19, which is for use as a chymase inhibitor.

21. The pharmaceutical composition as claimed in claim 19, which is for use as a cytokine production inhibitor.

22. The pharmaceutical composition as claimed in claim 19, which is for use as an anti-inflammatory agent.

23. A method for preventing and/or treating diseases caused by chymase comprising administering the compound according to any one of claims 13 to 18, prodrug, pharmaceutically acceptable salt or hydrate thereof.

24. Use of the compound according to any one of claims 13 to 18, prodrug, pharmaceutically acceptable salt or hydrate thereof for manufacturing a medicament for preventing and/or treating diseases caused by chymase.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP99/03864

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[6] C07D205/08, 401/12, 403/12, 405/06, 12, 14, A61K31/395, 40, 44, 445, 495, 505, 535
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
Int.Cl[6] C07D205/08, 401/12, 403/12, 405/06, 12, 14, A61K31/395, 40, 44, 445, 495, 505, 535

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CA, REGISTRY (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ADLINGTON R.M. et al., "An investigation of the N-arylsulfonylation of 2-azetidinones", Synth. Commun., (1997), 27(21), p.3803-13	1, 5, 9, 10, 12, 14, 16, 17, 19-22, 24
X	ADLINGTON R.M. et al., "Design and synthesis of novel monocyclic β lactam inhibitors of prostate specific antigen", Bioorg. Med. Chem. Lett., (1997), 7(13), p.1689-94	1, 14, 16, 17, 19
X	FINKE P.E. et al., "Orally active β-lactam inhibitors of human leukocyte elastase. 3. Stereospecific synthesis and structure-activity relationships for 3,3-dialkylazetidin-2-ones", J. Med. Chem., (1995), 38(13), p.2449-62	1, 4, 6, 9, 10, 12
X	GB, 2266527, A (Merk & Co Inc), 3 November, 1993 (03. 11. 93). (Family: none)	1, 4, 6, 9, 10, 12

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 July, 1999 (02. 07. 99)	14 September, 1999 (14. 09. 99)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP99/03864

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO, 96/149451, A1 (Smithkline Beecham PLC), 27 June, 1996 (27. 06. 96)	1, 2, 4, 6, 7, 9, 10, 12
A	& JP, 11-500415, A & CA, 2208530, A & EP, 799200, A1 & AU, 9643898, A & HU, 77089, A & CN, 1175246, A & FI, 9702584, A & NO, 9702909, A	3, 5, 8, 13, 15, 18
X	WO, 95/02579, A1 (ZENECA LIMITED), 26 January, 1995 (26. 01. 95) & AU, 9470800, A	1, 2, 4, 6, 7, 9, 10, 12
X	WO, 97/13750, A1 (CHIROSCIENCE LIMITED), 17 April, 1997 (17. 04. 97) & AU, 9672221, A	1, 4, 6, 9, 10, 12
X	JP, 2-6471, A (Merck & Co., Inc.), 10 January, 1990 (10. 01. 90) & EP, 337549, A1 & ZA, 8902549, A & CA, 1337990, A & AU, 8902549, A & DK, 8901705, A & FI, 8901689, A & NO, 8901470, A & CN, 1037144, A & HU, 50761, A & US, 5229510, A & AU, 9218582, A	1, 4, 6, 9, 10, 12
X	JP, 8-502752, A (Merck & Co., Inc.), 26 March, 1996 (26. 03. 96) & WO, 94/10143, A1 & CA, 2147129, A & AU, 9455875, A & EP, 666846, A1	1, 4, 6, 9, 10, 12
X	JP, 6-263723, A (Merck & Co., Inc.), 20 September, 1994 (20. 09. 94) & EP, 595557, A1 & CA, 2108584, A & IL, 107321, A & WO, 94/10142, A1 & AU, 9350283, A & CN, 1090272, A & ZA, 9307949, A & HU, 72084, A & US, 5591737, A & FI, 9501992, A & NO, 9501593, A	1, 4, 6, 9, 10, 12
X	JP, 7-242624, A (Japan Tobacco Inc.), 19 September, 1995 (19. 09. 95) (Family: none)	1, 6, 9, 10, 12

Form PCT/ISA/210 (continuation of second sheet) (July 1992)